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THE
NORTH OF ENGLAND
MEDICAL AND SURGICAL
JOURNAL.

No. I.

AUGUST, 1830.

THE
NORTH OF ENGLAND
MEDICAL AND SURGICAL
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No. 1.
JULY, 1850.

MANCHESTER;
PRINTED BY JOHN HARRISON, 26, ABRAHAM'S COURT, MARKET-STREET.

THE
NORTH OF ENGLAND
MEDICAL AND SURGICAL
Journal.

AUGUST, 1830———MAY, 1831.

VOL. I.

LONDON:
WHITTAKER, TREACHER, AND ARNOT.
HODGES AND SMITH, DUBLIN.

Printed by Harrison and Crossfield, Market Street, Manchester.

30895

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NORTH OF ENGLAND

MEDICAL AND SURGICAL

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VOL. I.
LONDON
PUBLISHED BY THE
MEDICAL AND SURGICAL
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INTRODUCTION.

THE introduction of a new Journal, at a period already remarkable for the number of magazines of general and professional literature, may appear to require some apology. As the object of the present undertaking, however, is not to add a supernumerary to the list of medical publications, having a similar design, but to supply a deficiency created by the altered circumstances of society; not to institute a competition with any existing work, but to cultivate a portion of the field of science, at present unoccupied,—it is presumed, that it will not be necessary to offer any lengthened explanation.

Until a very recent period, the publication of medical and surgical periodicals has been confined to the metropolitan cities, these situations affording, from their population, the magnitude of their hospitals, and the greater concentration of medical talent, more ample means of securing original contributions.

The northern counties of England, however, especially those of York and Lancaster, include a greater mass of population within the same limits, and more extensive public medical institutions, than perhaps any other part of the kingdom, the metropolis excepted; and therefore, afford peculiar facilities for the study of medicine. Northumberland, Westmorland, Durham, Cheshire, Staffordshire, Derbyshire, and the other counties which may be regarded as strictly belonging to the north of England, though less remarkable for the density of their population, offer many peculiarities highly interesting to the medical philosopher.

For the number and variety of hospitals for the cure of disease, this part of the country is indeed pre-eminent. Perhaps the full harvest of scientific results which such establishments are capable of producing, has not yet been reaped. In the routine of professional labour, opportunities of successful investigation are neglected, sometimes from the hurried succession of engagements, sometimes from mental and corporeal weariness, and, oftener still, from the difficulties which oppose the publication of new observations and opinions.

Amidst the increasing diffusion of knowledge, it cannot be supposed that the members of a profession, the study of which comes in contact with the whole circle of the sciences, should remain an exception. On the contrary, it is an undoubted fact, that in the course of the last twenty-five years, no class of individuals has made greater advances in general and scientific knowledge. In the most secluded districts of the empire, diligent observers are to be found scrutinizing disease, and recording the valuable evidences of morbid anatomy. The accumulated results of their experience would form no mean addition to medical knowledge; would tend to illustrate obscure paths of inquiry, to refute erroneous theories, and to confirm important practical opinions, hitherto regarded as imperfectly demonstrated.

A local Journal, while it affords a means of preserving and disseminating truths thus elicited, presents one of the most powerful incentives to the cultivation of medicine and its collateral sciences. It attracts more attention, in its immediate sphere, than a Journal emanating from a distant city; its communications are received from medical men frequently in contact with each other, and a generous rivalry in the zeal of inquiry, and the desire of making some worthy additions to knowledge are the natural results. Facts, previously regarded with little attention, are subjected to rigorous inquisition; and investigations, neglected in the busy recurrence of professional engagements, are zealously pursued. The numerous curious combinations of morbid phenomena, and the rare examples of disease, are watched and noted with additional care. The studies of Physicians

and Surgeons in hospitals, dispensaries, and various other medical institutions are conducted systematically, and for the definite purpose of enlarging the boundaries of the science. Such a Journal is read by many whom the metropolitan periodical literature seldom visits, and conveys to the most sequestered scenes of practice the earliest information of all important improvements in science.

In announcing our intention of commencing the publication of a Medical and Surgical Journal for the northern counties, we feel that we undertake a work of great public and professional responsibility. Justice to the character of the work must invest us with authority in the selection of materials, but justice to the professional public will demand that we shall be alone—of no party—without prejudice, and influenced only by a sincere desire of assisting the dissemination of knowledge. The work will assume less the form of a review or digest of the general improvements in medicine, than of a receptacle of the local results of original investigation. It will consist chiefly of papers founded on clinical observations, or on the results of pathological and physiological inquiry: to these will succeed select cases, generally arranged so as to illustrate some particular disease, and often in the form of quarterly reports of the practice of hospitals, dispensaries, &c. taken and communicated by the medical officers, conjointly or separately. Researches connected with medical statistics, a province of inquiry slightly cultivated in comparison with its importance, and investigations illustrative of the influence of local circumstances, particularly of the employments and the diversified moral and physical habits of society on health and disease, will receive peculiar attention. Contributions in the collateral studies of zoology, comparative anatomy, chemistry, and meteorology, will not be deemed irrelevant to the objects of the present undertaking. Biographical sketches of all eminent practitioners, not only of those who have obtained distinction in the great republic of science, but of such as have enjoyed a reputation more strictly provincial, in whose history are exemplified the accomplishments, the difficulties, and the duties of the medical character, will be esteemed

useful and instructive features of the work. Succinct notices of the character of the most important new publications will succeed; and lastly, brief but comprehensive details of new discoveries or improvements in medicine and surgery, both foreign and domestic.

The character of these communications will render it impossible that the publication of the Journal should be more frequent than one number every quarter, as it will resemble the transactions of a society for the promotion of medical knowledge, with the difference, that its contributors will not be united in one body, nor will they be confined to one city or county. It will be exclusively devoted to science, to the total exclusion of party politics and of personal allusions, and it will be its constant aim to cultivate that high tone of moral feeling and mutual respect, which should ever distinguish the members of a liberal profession.

From their medical brethren, whose opportunities of investigation, and whose habits of careful reflection, peculiarly qualify them to aid in the projected work, its promoters confidently expect that efficient patronage, which a zealous regard to the interests and honour of their profession cannot fail to secure in behalf of every scientific enterprize. Uninfluenced by any expectation of personal emolument, and desirous only of advancing the progress of professional improvement, by providing a bond of association between its scattered and isolated members, and an honourable vehicle for the records of scientific inquiry, they commend it to the united support of the extensive community of medical practitioners in the North of England, the features of whose professional character and attainments it will thus reflect, while its reputation will be the property of those who contribute most diligently, through its pages, to scientific knowledge.

THE
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AUGUST 1, 1830.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Sketch of the Medical Topography and Statistics of Manchester.* By EDMUND LYON, M. D., Physician to the Manchester Infirmary, Dispensary, and Fever Wards.

IN the first number of a work, which will receive numerous contributions from Manchester, (a town distinguished for its great population, wealth, and enterprize) it is desirable that some account should be given of its hospitals, and of those circumstances, more especially, which may be supposed to affect the health of the inhabitants. Though the present attempt must in many respects be imperfect, it may yet suffice to give the reader some idea of the physical and moral features of this important place; and it is hoped that future writers will be ready to fill up the outline, and complete the picture.

The plan intended to be pursued in drawing up this sketch is, to give,

I.—The Geological character of the district;

II.—A more particular description of the Town, and its climate, with remarks on the distribution and employments of the people;

III.—An account of the Infirmary, with notices of other establishments for the relief of the poor. For the geological

observations which follow, I am indebted to the pen of Dr. Henry.

“I.—The town of Manchester, situated in $53^{\circ}.25'.10''$. N. Latitude, and $2^{\circ}.10'.30''$. W. Longitude, is placed almost at the north-west angle of an extensive plain, which reaches westward through the south of Lancashire, and stretches, almost without interruption, to the south and south-west, over Cheshire, Shropshire, and a great part of Worcestershire. Its basis is that deposit, to which geologists have given the names of *red-ground*, *red-rock*, *red-marle*, and *new red sandstone*. A red colour, however, it is well known, is not essential to the new sandstone; and in different parts of the plain, this rock is elevated into low hills, affording quarries of white freestone, which is well fitted for the purposes of architecture. At Manchester, and in its neighbourhood, the colour of the rock corresponds generally with its name; for it is formed of siliceous grains, cemented by more or less of an ochrey argillaceous marle, into a dull red stone, soft when moist, and of moderate hardness when dried. The beds, in which this stone is disposed, have nothing in themselves of a slaty character; but are interstratified with thin seams of a similar sandstone, abounding in micaceous scales, and exhibiting a glittering aspect and foliated structure; and, also, by partings of indurated red clay, called *raddle*, of various degrees of thickness.

“The total depth of the red marle at Manchester must be very considerable; for we have no well authenticated instance of its having been penetrated. At the printing-works of Mr. Hoyle, situated on the Medlock, near the eastern boundary of the town, the rock was bored to the depth of 129 yards, for the purpose of obtaining a supply of water, which it abundantly answered. Specimens of the strata, brought up by the borer, have been preserved by Mr. Hoyle. They exhibit a series of sand-stones, with few exceptions of a red colour, the quartzose ingredient of which becomes more perfect and crystalline, and is united by a diminishing proportion of argillaceous cement, as the depth increases. The intermediate strata of raddle continue to alternate with the rock; and at the depth of 113 yards, a layer of the former substance, much indurated, was passed through, of the thickness of 2 feet 7 inches. The boring ended in hard siliceous sand-stone. At Strangeways, about a mile to the N. of the Exchange, the boring had been previously carried by Messrs. Lomas, to the depth of 142 yards, and the workmen supposed that they had penetrated the sand-stone; but of this it is impossible to obtain evidence, as no specimens were preserved. It is more probable, that they had only perforated one of the strata of softer materials,

which separate the beds of sand-stone from each other. At this place, also, a supply of excellent water was obtained, amounting to 9000 gallons per hour.

“The most important geological feature of the country near Manchester is that widely extended coal formation, called, by Messrs. Phillips and Conybeare,* the *South Lancashire*, and by Mr. Farey the *great Derbyshire and Lancashire, Coal-field*. This field commences in the north-western part of Derbyshire, and ranges from thence to the south-western part of Lancashire, forming a crescent-shaped figure, with Manchester nearly in the centre, the chord or span between the opposite horns being about 40 miles. Beside this extensive field, there are a few smaller ones, apparently independent of it, and deposited in detached basins. One of these, called the *Bradford Coal-field*, approaches within a mile of the town of Manchester to the eastward. It is little more than two miles in length, and about 2000 yards in breadth, and exhibits some peculiarities of position, which have been well described by Mr. Bakewell, in the Transactions of the Geological Society, vol. ii. Over the first coal, occur thin beds of limestone, which may be called *magnesian*, though the proportion of magnesia falls very much short of that, which exists in the similarly named lime-stone of Derbyshire and Yorkshire. The latter, for the most part, is constituted of carbonate of lime and carbonate of magnesia, in the proportion of an atom of each.† But a specimen of lime-stone from the Bradford coal-field, at Gorton, analyzed under my inspection, yielded those two carbonates, in proportions nearly agreeing with four atoms of the calcareous carbonate, and one atom only of the magnesian carbonate, with about seven per cent. of clay and oxide of iron. This stone, when burned, is sold under the name of Ardwick-lime; and like the lime of Barrow, in Leicestershire, which it probably resembles in composition, is much valued for its property of setting firmly under water.

“Beside the alluvial deposits of sand, gravel, and water-worn stones, which occur in the beds of the rivers and brooks of this district, and in the vicinity of their banks, there are also found, beneath the soil, numerous detached beds of *boulders*, or rounded stones, of various sizes. These have evidently had their origin in distant countries, and have been brought by extensive and powerful currents, or torrents, of water. In the neighbourhood of Manchester, this *diluvial debris* abounds with fragments of rocks, torn probably from

* Geology of England and Wales, p. 382.

† The atom of carbonate of lime being taken at 50, and that of carbonate of magnesia (anhydrous) at 42, on the hydrogen scale.

masses that exist no nearer than the counties of Westmorland and Cumberland. Of this an excellent illustration was observed by Dr. Hibbert, in a newly opened bed of gravel behind Strangeways-Hall, in which he recognized many of the rocks of that mountainous district. These fragments, he conjectured,* might have been swept across the Bay of Morecambe, an opinion which will appear not improbable, when it is considered, that the colossal blocks of granite, scattered over the plains of northern Germany, have been traced to the Scandinavian chains on the opposite side of the great gulf, which is now occupied by the Baltic sea; an instance, to which many similar ones may be found in the records of geological science.

“It is to be regretted that so little information has been laid before the public respecting that part of the great coal-field, which lies within the county of Lancaster. With the exception of the short memoir by Mr. Bakewell, relating only to one or two partial coal-basins, nothing important has been published on the subject. It is, however, but just to notice with approbation “*a Vertical Section of the Strata across the Great Lancashire Coal-field*” drawn from actual survey, by Mr. Elias Hall, of Castleton. This chart is considered, by persons practically acquainted with the coal-field, as a work of great merit, and, in the main, accurate. It would have been much more useful, if it had been accompanied by an illustrative memoir, for which Mr. Hall is well qualified to furnish the materials.

“The strata which, in natural order of position, lie below the coal formation, do not appear very near Manchester. At West-Houghton to the N.W., the mill-stone grit and lime-stone shale break through the coal strata, and form the termination of a chain of hills ranging to the east, of which Rivington-pike, 1500 feet high, is the most lofty. The more elevated ranges of mountain lime-stone are found only in the north and north-east of the county, the most southerly point being near Clithero. The middle and southern parts of the county are generally flat. The western district, near the sea, is based on an extensive forest, originally submarine, which advances considerably inland, and stretches from the neighbourhood of Liverpool to the south bank of the Ribble, and from the north bank of that river to the Lune.

“The above very general sketch of the geological structure of the district, of which Manchester forms the centre, is all that is considered necessary for the purposes of a medical work.

* In his very interesting Lectures on Geology, delivered in Manchester in 1827.

The only principles on which the strata of any district lying beneath the soil and superficial beds of clay and gravel, appear capable of exerting an influence over the health of its inhabitants, are,—as those strata absorb water more or less readily and completely, thereby affecting the hygrometrical state of the atmosphere;—and as they furnish, by springs and rivers, water more or less impregnated with foreign ingredients, and therefore less or more fit for the use of man. Under the first view, the red sand-stone is well adapted, by the avidity with which it imbibes water, to moderate the evils of a rainy climate like that of Lancashire. Under the second aspect, this rock furnishes an abundant supply of beautifully clear water, agreeable to the palate, but holding in solution much carbonate of lime, and a little sulphate of that earth, both of which are deposited on boiling. There is no reason to suppose that these impregnations have any effect unfavorable to health. They can have no tendency to produce calculous diseases, which were once imputed to them, but which have been shewn to be produced by causes quite independent of the qualities of water, and to depend on morbid operations of the animal economy. The almost universal freedom of the red sand-stone from noxious metals (lead and copper being rarely found in it) adapts it for the purpose of an excellent natural filter. By its spontaneous decomposition, also, this sand-stone is known to furnish an excellent sandy loam, one of the most desirable soils that can be found for the production of every vegetable; and, in this manner, it cannot but materially contribute to the salubrity of any country, of which it is the prevailing rock.”

II.—In proceeding to a more particular description of the town of Manchester, it will be convenient, in the first place, to trace the course of the rivers which contribute to form its boundaries, and which carry off the impurities discharged through the common sewers; and afterwards to treat of the several parts, into which it may naturally be divided.

1. The Irwell, rising in the high moorlands between Haslingden and Todmorden, flows to the S. past Bury, two miles below which it is joined by the Roch from the N. E.: as it approaches Manchester, it takes a very circuitous course through a broad and shallow vale just above the town; first making a great curve, with its convexity to the E., under the high bank of Broughton, then returning upon itself, and almost encircling a large extent of low, flat land, it next resumes its course to the S. E. until it strikes against the base of the high and precipitous bank, upon which Salford Crescent is built, and is reflected upon itself so as to form another narrow peninsula of small extent; then, sweeping round by the E.

nearly under the high ground of Cheetwood, it receives the waters of the Irk, and takes a direction to the S. W., thus forming a loop, or bend, within which the town of Salford stands. In consequence of the naturally lazy course of the Irwell through this valley, retarded as it still further is by some weirs, constructed for the convenience of the mills upon its banks, a large tract of the low land, above described, is liable to be laid under water by the ordinary floods which occur every year:—in the great floods, which recur at longer intervals, the whole valley has put on the appearance of an extensive lake. Some persons, who have given their attention to the subject, think that the accumulation of water, both in this river and in the Mersey, with which it is united about eight miles below Manchester, has of late years been more sudden and overwhelming than formerly, in consequence of an extended system of drainage throughout the adjacent districts.

The Irk, rising amongst the hills to the N. and N. W. of Oldham, is peculiarly liable to sudden and heavy, but very transient floods.

The Medlock springs from the hilly country to the E. of Oldham, and running W. S. W. to Manchester forms the southern boundary of the township, and pours its stream, of an inky blackness acquired from the numerous Dye-houses on its banks, into the Duke of Bridgewater's Canal, of which it is the principal feeder; the surplus water afterwards flows into the Irwell about a mile and a quarter below the mouth of the Irk.

The general breadth of the Irwell is forty yards; the Irk and the Medlock are about a fourth, or a fifth of its magnitude.

2. What may with propriety be spoken of under the general denomination of Manchester, comprehends a portion of the following seven townships,—Manchester, Ardwick, Chorlton-Row, Hulme, Salford, and Cheetham, in the parish of Manchester; and Pendleton, in the parish of Eccles. As the greatest and most important part of the town lies within the township of Manchester, which contains 1577 statute acres, it will be proper to begin with it; and, for the convenience of arrangement, we may subdivide this into two parts,—the old, and the new.

The old and central part of Manchester is situated between the Irwell, the Medlock, and the Irk, and a line drawn from Scotland-bridge on the Irk, to Ancoats on the Medlock. The varieties of soil found within these limits are a stiff clay, gravel, and sand; but the clay greatly predominates, and covers the rock to a depth of from two or three to twelve yards, or more. Marle was formerly extensively quarried here; the large excavations, which many persons now living will remem-

ber to have existed in different parts of the town under the expressive name of "The Daub-Holes," were probably the source whence the neighbourhood of Manchester was for many ages supplied with this manure.* The only remnant of the Daub-Holes now visible is the Pond in front of the Infirmary: what were formerly known by the name of Shude-Hill-Pits are now covered with buildings in Swan-street.

The surface of the ground is uneven, and though no where very high, possesses elevation sufficient to facilitate at all times the perfect drainage of every part of the town, with the exception of a few spots which lie below the flood-line of the Medlock and the Irk. The central plain, on which the Infirmary stands, is $156\frac{1}{2}$ feet above the level of the sea, and 80 feet† above the bed of the Irwell, from which it is distant half a mile. There is a gradual ascent from this point towards the N. E. all the way to Oldham; and as gradual a fall to the S. W. until it terminates abruptly in the Castle Field. From St. Mary's Church to the S. S. W., following the course of the river downwards, there is a gradual slope until it is lost in the flat and rather swampy ground, about a quarter of a mile in width, lying in the angle between the Irwell and Medlock, and overlooked by the higher ground,—long known by the name of Castle Field, and perhaps rightly conjectured by Mr. Whitaker to have been the site of the original town, founded by Agricola in the year 79. This low land is but partially built upon, and certainly cannot be deemed an eligible situation for dwelling-houses: there are already several extensive warehouses on a part of the plot adjoining the canal; and others will probably be constructed here in connection with the Liverpool Rail-Road, which is to be carried by archway and embankment over this land.

Proceeding from St. Mary's in a northerly direction, we find a nearly level strip of land, of the average width of 250 yards, extending to the rocky bank of the Irk, on the brink of which stands Chetham's Hospital, popularly known as "The College," at an elevation of 40 feet above the stream. The remains of a deep fosse, cut from the Irk to the Irwell, have been distinctly traced along the curved line of the streets named Toad Lane, Hanging Ditch, and Cateaton Street. About two acres of this area are now occupied by the College, and its garden; and other two by the Collegiate Parish Church, and its cemetery,—which is not however at present used for the purpose of interment. The greater part of the old, timber-built houses,

* See Whitaker's History of Manchester, vol. I. p. 213.

† On the authority of Mr. Wm. Johnson, Surveyor.

yet remaining, are to be found in and near this quarter of the town; but the reforming hand of modern improvement is annually reducing their numbers.

About midway between Scotland Bridge and the College, the road to Bury is carried over the Irk by a bridge which overtops the roofs of some houses built on the margin of the river; and from which we look down upon an extensive parochial burying-ground, situated on the low northern bank of the Irk, which,—as far up as Travis Isle, along with the point, in which the high land separating the valleys of the Irk and of the Irwell terminates,—is included within the township of Manchester. On the above point of land the Manchester Poor-House is very favourably situated: it is a large, substantial building, capable of accommodating more than 600 inmates.

Turning now to the south, and passing over the middle line, we descend into a hollow, along which a rivulet named Shooter's Brook runs, partly covered, partly open, to fall into the Medlock near Garrat Hall, about a mile below Ancoats Bridge. This hollow is but partially built upon: the principal groupes of dwelling-houses within it are Shooter's Row,—near the termination of the brook, and lying far below a main street, which has lately been raised by embankment;—and Brook Street, with Lower Brook Street, actually upon the water, and adjoining London Road, which was likewise raised some years ago above the natural level. Several of the houses in the latter situation are altogether unsuitable for the habitation of civilized human beings:—they are close, damp, dirty, and incapable of being made otherwise.

Rising from the hollow, we pass over another plain of 300 yards in breadth, and then descend gradually to the Medlock. On the northern bank of this river there are two groupes of dwelling-houses that require animadversion; one in a deep hollow between it and Granby Row; the other adjoining Oxford Street, between the river and the large Gas-holder now in the course of erection: both these are low, damp, and confined situations.

Almost the whole mass of buildings lying between the Infirmary and the Irwell, to the extent of about 250 yards on each side of Market Street, consists of warehouses and the places of business for persons whose residence is in other townships. This district has been greatly improved since the year 1821, by the widening of Market Street and some of its avenues, so as to admit a free current of air through the very heart of the town; and further improvements of a similar tendency are understood to be in contemplation. Several other good streets in this quarter are occupied by such of the more opulent

classes and professional men, as find it convenient or necessary to reside in the centre of the town: but the extending trade, which has already driven so many genteel families from their former abodes, is annually making fresh encroachments, and converting some of the best houses in town to the purposes of traffic. The remainder of this division of Manchester, with a few trivial exceptions, is occupied by the habitations of shopkeepers, and the various classes of the labouring population, interspersed with Cotton Mills, and almost every other kind of manufacturing establishment.

The other division of this township, to the N. E. of the former, extends along the middle nearly a mile on the Oldham Road, and on each side of this for half a mile. The northern portion consists of the valley before alluded to, lying on both sides of the Irk, and a quarter of a mile wide: the buildings collected in this space consist of Scotland and Red Bank on the north side, and Newtown,—some time since as well known by the name of Irish Town,—on the south: the houses are entirely overlooked, on one side from the Bury road, and on the other from the road leading to Middleton and Rochdale.

The peculiarity of the district consists in its being laid out in streets and courts, inhabited almost entirely by the people employed in the numerous large Cotton Factories, Iron Foundries, and Dye Houses, established in this quarter; by a large body of Weavers; and by the Shopkeepers necessary to such a population. Nearly the whole of this mass of building, (which is estimated at present to contain at least 50,000 inhabitants,) has risen since the year 1793; or, it may with truth be said, since the beginning of the present century;—the land having previously been only partially built upon, to the depth of 120 yards from Great Ancoats Street, and Oldham Road: (and this must be considered, in a great degree, as a consequence of the unnatural stimulus given to commercial enterprise by the extraordinary character of the late war, and by the suspension of cash payments during its continuance.) The portion between Oldham Road and the Medlock is named the New-Cross District, or No. 1; that to the north is named the St. Michael's District, or No. 2: in the year 1821 there were

	INHABITED HOUSES.	FAMILIES.	INHABITANTS.
In No. 1.	3385	4414	21,188
.. No. 2.	2343	3234	15,479
Total.....	5728	7648	36,667

and a great addition to these numbers has been since made.

The houses in general do not exceed two stories in height,

besides inhabited cellars, which is the most common plan of building; though entire streets are to be found without any basement story. In the centre of the town it is more usual to see the habitations of the poor raised three stories above the cellars, except in those parts where cottages have recently been erected, expressly for their accommodation. The cottage plan is decidedly most conducive to comfort; for the larger houses are of necessity let off to several families, each occupying a floor, or a single room; and wherever that is the case, it is in vain to look for much neatness, or good order. There are some flagrant examples of what may be called the barrack system in the outer division of the town; one especially in Cotton Street, (No. 27) a lofty building of six stories, occupied by, at least, twelve families of weavers, which,—with the exception perhaps of a dense mass of cottages between Pot Street and Canal Street, in this district,—Brook Court, before mentioned,—and a place called Gibraltar, near Scotland Bridge,—is the most uncomfortable and disgusting abode, which the medical officers of the Infirmary have occasion to visit in Manchester. Out of 17,275 tenements, assessed to the Police-Rate in this township, 11,324 are assessed at, or below the sum of £10. per annum.

In the first Report of the Committee appointed to superintend the sewerage and scavenging of the township, the main sewers are represented to be generally in a very bad state; “being found to be not only imperfect in construction, but inadequate in size to carry off the great accumulation of water which, through the increased size of the town, has to flow through them.” They have in several situations fallen in, owing to their “having been merely cut through the soft rock, without any lining of bricks and flags.” A serious failure of this kind took place on the 15th of September last, in Cateaton Street. “The street fell in, for a considerable space, to the depth of 27 feet; and the water consequently dammed up, and undermined the street to such a degree as to endanger the safety of the houses on both sides.” One of the principal channels, along which the cleansings of the streets and houses are conveyed, is a little brook, dignified by the name of the river Tib; which, oozing from some stagnant pools at Miles Platting, and fed by the drainings of the adjacent fields, runs under Oldham Road, and the centre of the town, covered in some places by a slight arch of uncemented bricks, and in others by flags; and fulfilling the office of a common sewer, discharges itself into the Medlock, near the upper end of Little Peter Street. This, as well as the other sewers, requires extensive and costly repairs, in order to render it efficient.

The scavenging is now well conducted, so far as it extends; but that salutary operation is performed only on those streets which have been declared public high-ways; a necessary preliminary to which is, that they shall have been finished, with respect to sewerage and paving, in a manner satisfactory to the Surveyors. The number of private, unpaved, and consequently filthy streets is lamentably great in Manchester; the picture drawn by Sir W. Scott of the village of Tully-Veolan may, in part, be taken as a faithful representation of their condition: the only scavengers that enter them are dogs and swine, allowed to roam at large: and they are useful in their way, by consuming some of the offal which is indiscriminately cast in heaps before the doors. It is much to be regretted that the Surveyors of the highways, or some other body of gentlemen specially appointed, were not, forty years ago, invested with authority to regulate the laying out of building-land within the precincts of the town, and power to enforce the observance of certain conditions on the part of the owners and lessees of such property. If the growth of Manchester had proceeded under such auspices; and if every street and court, as soon as completed, had been taken charge of by the public functionaries, there would be no occasion now to reprobate the offensive, and disgraceful exhibitions of accumulated filth, which present themselves in every quarter. These remarks are applicable, more or less, to all the townships of this manufacturing metropolis: in all has the want of some general rule on the subject been experienced; and the only plausible pretext for non-interference is “the sacred rights of property.” Undoubtedly all due reverence should be paid to the liberal maxim,—that a man may do what he will with his own;—it is equally clear, however, that this requires to be qualified and restricted by the social maxim,—that no man shall so use his own as to injure his neighbour; and thus restricted, “the rights of property” tend to the ultimate benefit of all parties. There cannot be a rational doubt that much disease has arisen from the state of things here complained of; and it is hoped that the Bill brought into Parliament during the present Session will be found an effectual remedy for the evil.

The townships of Ardwick, Chorlton Row, and Hulme lie in succession from E. to W. along the southern bank of the Medlock, and extend a mile or more towards the Mersey. The surface of this district, after receding a very little from the river, is almost uniformly flat, and of an elevation equal to the highest part of Manchester.

Ardwick has made the least progress of the three in point of population; but has long been distinguished for the many

genteel residences which it contains, forming a handsome, open suburb, or appendage to Manchester: its rate of increase at present, however, seems to be somewhat accelerated.

The *town* of Chorlton Row is entirely the growth of the present century; the population of the whole township in 1801 having been only 675, and in 1821 so large as 8209; which number has received considerable augmentation since. Several factories of great size are established in this township, adjoining the Medlock; in some of which the operations of spinning and weaving are carried on simultaneously by steam power. The great bulk of the inhabitants consists of the families of those engaged in these factories: yet a large part of the town, most remote from Manchester, consists of spacious, well-formed streets, inhabited by those who carry on business nearer the Exchange, or by those who live independent of trade. The Police of Chorlton Row is regulated by an Act of Parliament; but the evils arising from a want of power to make all streets public highways are as conspicuous here as in Manchester, and might have been prevented more easily than they will be remedied.

The *town* of Hulme consists of a narrow belt of buildings extending from the Medlock at Knott Mill about two-thirds of a mile to the S. W. It contains a few cotton mills, and a smaller proportion of the better class of houses than either of the other townships: the Cavalry Barracks are situate near its extremity.

The township of Salford contains 1350 statute acres of land; of which about 370 may be calculated to lie within that bend of the Irwell, which was before mentioned as enclosing the principal part of the town known under the name of Salford.

From a ridge which occupies the north of the peninsula, and which is continuous with the site of the Crescent, the ground slopes gradually to the river, whose bank is for the most part lower here than on the Manchester side.

On this bank, separated from the river by the breadth of a street, stands the House of Correction for Salford Hundred, commonly known as the New Bailey: it is an enclosure of more than five acres, resting on the rock, and situated half a mile below the mouth of the Irk. In the year 1793, a line drawn from the north-western angle of the New Bailey to the Poor House, and along the river, would have included the whole town of Salford; none but a few scattered houses existing beyond those limits. Since that time the town has been more than doubled in extent; spreading over a portion of the ridge, a part of which is yet occupied as brick fields;—likewise over some of the low ground to the N. and N. E.,

most of which requires the level of the streets to be raised by embankment;—and stretching towards Pendleton, and on each side of Oldfield Lane; which has furnished a cognomen to an hereditary Surgeon, of great provincial fame, who resides there.

Most of the streets in Salford are narrow; and many of them are as dirty and incomplete as the generality of private streets in Manchester. One spacious street extends throughout from E. to W.; another from the commencement of the first to the N. W.; and two of the three main communications with Manchester are of a respectable width. One of the poorest, and most unhealthy districts adjoins the Bolton canal; there are likewise some confined and unwholesome situations between the main street and the river; but the spot of all others the least friendly to health and comfort is the Old Cloth-Hall, situated nearly opposite the confluence of the Irk and the Irwell, but inaccessible to the purifying breeze which might be expected in such a situation. The approach to this place is by an archway from Greengate, and the visitor finds himself involved in a labyrinth of low dwellings, consisting partly of the old building formerly used as a cloth-hall, divided into two stories by an open gallery in front, from which the upper rooms are entered, and every room being a separate tenement;—partly of a range of cottages recently built across the area, with other cottages outside of these, so as to leave a very narrow space between the several rows. A few years ago, one-third of the patients, removed by a Physician of the Infirmary from Salford to the Fever-Hospital, were taken from this nursery of disease. Any further notice to be taken of particular localities may with advantage be left to a gentleman, familiar with the district, who has promised to furnish reports from the Salford and Pendleton Dispensaries.

Of Pendleton it is not necessary to say much: the populous part of the township adjoining Salford on the N. W. may be viewed as an excrescence, connected with the main body of the town only by a slender pedicle, formed of a range of good houses, extending beyond the Crescent. This suburb is two miles distant from the Manchester Exchange, and is inhabited by a large number of the more wealthy classes, to whom it affords a very agreeable residence. The site of the best houses is open, and comparatively high; but a considerable number of cottages, occupied by weavers and workers in cotton-mills, are built on the lower, though not very low ground, on the eastern side of the Bolton Canal.

Of Cheetham township also a small slice only belongs to the town of Manchester; and it is but a few years since that this portion assumed a town-like form. It is known by the

name of Strangeways, and is situated on the north-eastern bank of the Irwell, opposite Salford; being separated from Manchester township by an imaginary line, drawn from the Poor-House to the Iron-Bridge leading into Salford. Some houses have been erected on the high ground beyond the Poor-House: but the principal mass of building is on the flat between the heights and the river, not more than 300 yards in width; and as this ground has formerly been liable to inundation, it was thought prudent to lay down a large quantity of adventitious soil, for the purpose of raising the streets above the natural level. Most of the houses in Strangeways are adapted to the use of respectable families with moderate incomes.

The population of the several townships now described amounted, in the years 1801, 1811, 1821, to the following numbers, according to the Parliamentary returns, as given in Baines's valuable compilation.

	1801.	1811.	1821.		
	PERSONS.	PERSONS.	HOUSES.	FAMILIES	PERSONS.
Manchester ...	70,409	79,459	17,373	22,869	108,016
Ardwick.....	1,762	2,763	656	735	3,545
Chorlton Row	675	2,581	1,846	1,683	8,209
Hulme.....	1,677	3,081	823	890	4,234
Salford	13,611	19,114	4,818	5,449	25,772
Pendleton.....	3,611	4,805	1,095	1,106	5,948
Cheetham	752	1,170	385	375	2,027
Total.....	92,497	112,973	26,996	33,107	157,751

The numbers for the whole Parish, consisting of 30 townships, and extending over a surface of 60 square miles, were in the same years as follows:—

	1801.	1811.	1821.		
	PERSONS.	PERSONS.	HOUSES.	FAMILIES	PERSONS.
And the Inhabitants of the Hundred of Salford, amounted to the following numbers.....	102,300	136,260	31,629	38,414	187,031
	281,413	352,699	78,357	88,491	457,380

There can be little doubt that the subsequent increase has been proceeding in nearly the same proportion, notwithstanding the check experienced in 1826, and operating even yet, through the low state of the market for manufactured produce.

The habits of this large mass of people are, generally speaking, industrious and orderly, and influenced to a great extent by a deep sense of religious obligation. There are, of course, numerous exceptions from this remark, and, as in all large towns, abundance of profligate and abandoned characters are to be

found: yet, that the character above given is fairly deserved, might be inferred from observing the numerous places of public worship of every denomination in Manchester; the multitude of schools for the instruction of the young, and the extraordinary number of Sunday Scholars devoting their day of rest to the improvement of their minds;—nor will a closer acquaintance with the people tend to lower them in the estimation of the observer. Their provident and thrifty habits are indicated by the many associations for mutual support, formed under the name of Friendly Societies; by the Building Clubs; and by the deposits in the Bank for Savings. It is to be lamented indeed that such a laudable spirit should be checked and discouraged, as it so often has been, by the inadequacy of the funds of such societies to satisfy the claims of all the members, and chiefly of those who have contributed the longest;—arising either from miscalculation in the first instance, or from mismanagement, or fraud afterwards.

The Irish, here as elsewhere, are the least thrifty, and most wretched part of the population. They crowd more together than any others; two families frequently occupying one small chamber, and thinking themselves well off if provided with a couple of bedsteads, two or three chairs, a table, and a pan, with a few pieces of earthenware: for it is not uncommon to see them even more destitute than this;—with a heap of shavings and a piece of sackcloth in a corner for a bed, two or three clumsy stools, and the least possible culinary apparatus, for the whole of their furniture. The diet of these poor people must necessarily be the poorest imaginable: families even, with more appearance of comfort about them than these, have lately been reduced to live upon a scanty allowance of potatoes, oatmeal gruel, bread, and tea. The hand-loom weavers, as a class, many of whom are Irish, have for several years been struggling with their unhappy fate, toiling early and late to gain a bare subsistence;—from 4*s.* to 6*s.* a-week is as much as a weaver can, with all his diligence, now earn. It must be hoped that their children may find employments of a more profitable kind; which, however, cannot reasonably be expected whilst the people continue to increase faster than the means of employing them.

The persons engaged in Cotton Mills receive, as a body, better wages than most other classes of labourers. Spinners of fine yarn, even since the late reductions, can earn from 25*s.* to 30*s.* a-week; and coarse Spinners from 18*s.* to 21*s.* Children of nine years and upwards, as Piecers, can earn from 3*s.* to 4*s.* 6*d.* a-week; and their parents are commonly engaged in the same mill. Between these extremes various

rates of wages are given to the Batters and Pickers, the Carders, Stretchers, Doublers, Reelers, Makers-up, Warpers, Winders and Weavers, who form the complement of workers in a modern Cotton Factory. The usual hours of labour are from 5 in the morning till 7 at night, with half an hour's rest for breakfast, an hour for dinner, and half an hour in the afternoon;—a few mills are kept at work day and night, with two sets of hands: the temperature of the rooms, in which the work is performed, ranges from about 60°. to 80°. Fahr.

The other classes of the labouring population may be more appropriately noticed when the diseases incident to them are particularly detailed.

Before quitting this part of the subject it is necessary to advert to an evil, of recent origin in this town, which has rapidly attained an enormous magnitude;—namely, the excessive multiplication of Dram-shops, now almost universally attached to the Public Houses, and frequented to an alarming extent, especially by the female part of the population, and even by children. Some of these baneful places of resort are scarcely ever closed: they stand open to receive the latest wanderer by night; and again, to tempt with a treacherous warmth the earliest of those who repair to their morning's work. If the practice be suffered to continue, it must inevitably debase both the moral, and physical character of the people.

THE CLIMATE of Manchester may justly be called mild: the air is humid, and the quantity of rain falling in a year is rather above the common average of England; but deep falls of snow rarely occur, and any considerable fall is generally followed very soon by a thaw; as was the case this year on the 7th of February, when a sudden termination was put to the frost which had continued, with slight intermissions, for thirteen weeks. The prevailing winds are the S. W., the W. and the S., which are generally loaded with moisture: strong west winds occasionally waft hither salt water from the Irish Sea, distant 30 miles; windows exposed to the W. having been repeatedly covered with a copious incrustation, proved by Mr. Dalton and others to be really sea-salt. The easterly winds are next in frequency, and always produce more or less of a disagreeable feeling of coldness, and contraction of the cutaneous vessels.

In the winter Manchester is subject to very dense fogs, deeply tinged with particles of soot, which are at all times disagreeably abundant in the town's atmosphere; there is little reason, however, for supposing the smoke to be really deleterious. At all seasons, the valley below the Crescent in

The mean height of the	} in {	Manchester	29.85
Barometer, on an average		Liverpool	29.79
of 25 years, is		London	29.87

The mean Temperature of the air in Manchester will be shewn by the annexed Table, drawn from thirty years' observation.

Mr. Hanson's observations for fourteen years, give a mean annual temperature of $48^{\circ} 87$.

MONTHLY MEAN.		QUARTERLY MEAN.	
February .	38 ^o 6	} Spring	42 ^o 03
March . . .	41.		
April	46.5		
May	52.2	} Summer . . .	56.46
June	57.4		
July	59.8		
August . .	59.6	} Autumn . . .	54.8
September	55.8		
October . .	49.		
November	41.1	} Winter . . .	38.23
December	37.5		
January .	36.1		
		Annual Mean 47 ^o 88	

The air of the town is perceptibly warmer than that of the immediately surrounding country; the difference probably amounts to two or three degrees. Dunham, however, ten miles to the S. W. possesses a climate still milder, and on this account is much resorted to by invalids: a declivity facing the S. W. receives the full benefit of the sun's rays, and is protected in a great measure by the high ground, and plantations from the easterly and northerly winds.

On every side but the W. and S. W. the country rises from Manchester; to the N. and N. E. with beautiful undulations, and in other directions more uniformly. Six miles to the North, on the high ground at the foot of which run the Roch and the Irwell, garden produce is commonly three weeks later than about Manchester. At a distance of from 10 to 14 miles, the horizon is bounded by a chain of hills, extending in a semicircular form from the N. W. by E. to the S. E. It has

been supposed, with some plausibility, that these hills intercept the clouds borne by westerly winds from the ocean, and thus cause an undue proportion of rain to fall in this district : but such a cause cannot operate on the coast in the same degree as it may so much farther inland ; and yet, in the table given below,* it will be seen that Liverpool is very little behind us in its annual amount of rain.

TABLE OF THE MEAN MONTHLY, AND ANNUAL FALL OF RAIN,
ON AN AVERAGE OF MANY YEARS.

	MANCHESTER.			Liverpool	Lancaster	London
	Average of 18 yrs. Mr. Hanson	Av. of 33 yrs.		18 yrs.	20 yrs.	40 yrs.
	Wet Days.	Inch.	Inch.	Inch.	Inch.	Inch.
January ...	12	2.234	2.310	2.177	3.461	1.464
February..	13	2.454	2.568	1.847	2.995	1.250
March.....	13	2.456	2.098	1.523	1.753	1.172
April.....	13	1.713	2.010	2.104	2.180	1.279
May.....	14	2.824	2.895	2.573	2.460	1.636
June.....	12	2.433	2.502	2.816	2.512	1.738
July.....	15	3.427	3.697	3.663	4.140	2.448
August....	16	3.163	3.665	3.311	4.581	1.807
September	14	3.002	3.281	3.654	3.751	1.842
October....	16	3.789	3.922	3.724	4.151	2.092
November	16	3.493	3.360	3.441	3.775	2.222
December	14	3.559	3.832	3.288	3.955	1.736
Total....	168	34.547	36.140	34.121	39.714	20.686

The mean of two series of observations made in Manchester indicates an average annual fall of rain there, equal to 35.34 inches.

The supply of water for domestic purposes, until 1809, was obtained entirely from a number of wells, which furnished water strongly impregnated with lime ; and from cisterns in which the rain water was preserved. At the period above named, a company was formed for the purpose of supplying the town with this necessary article ; and additional reservoirs have recently been constructed, extending over a surface of 50 or 60 acres, into which the water from several rivulets between Manchester and Ashton is collected, and thence distributed through iron pipes to all parts of the town. This water possesses the usual qualities of river water, and though not very pleasant for drinking, is valuable for every other purpose.

The only mineral water in the neighbourhood, worthy of notice, is the chalybeate and aluminous spring at Lees, near Oldham, which has been described by Dr. Walker of Huddersfield.

Concerning the Diseases most prevalent here, occasion will

* Extracted from Baines's History of Lancashire, vol. I. p. 81.; and vol. II. p. 156.

be found to speak hereafter, more conveniently than at present. In the mean time it may be remarked, that Scrofula,—Phthisis,—Inflammation of the Bronchial membrane, in all its degrees,—Rheumatism, acute, and chronic,—Dyspepsia in all its various forms,—and Chorea, are the most common in this district. Cases of Diabetes also are numerous; though not sufficiently so to entitle it to rank with the others.

The Bills of Mortality hitherto published afford no data that can be fully relied upon, in computing the relative mortality of the town. Before the present century, the interments in the parochial burying ground only were recorded; and at an early period the record may have corresponded pretty nearly with the fact, because few interments took place elsewhere: but, along with the growth of the town, there must have been an increasing discrepancy between the real and the recorded burials; and even after obtaining accurate returns from every cemetery in the place, we shall be furnished with an account, not of the number of *deaths*, but only of the number of the dead who are buried within the town; to the exclusion of all who, dying here, are conveyed to some of the surrounding villages for interment,—and of all who, in the latter stages of disease, retire into the country to die. It is surprising that Dr. Hawkins* did not suspect some fallacy in documents, which led him to the conclusion, that the annual mortality in Manchester does not exceed 1 in 74; whilst Dr. Young at the same period reckoned the mean mortality of all England to be 1 in 49.†

(To be continued in the next Number.)

ART. II.—*Comparative Statement of Diseases in Hospital Practice, during four years, viz. the years 1826, 1827, 1828, 1829; with Observations.* By EDWARD CARBUTT, M. D., Physician to the Manchester Infirmary, and Dispensary, and also to the House of Recovery.

(N. B. The nomenclature employed in the following table is not strictly that of either Cullen or Good. The author would have preferred the nomenclature of Good; but, from its not having yet got into general use, some embarrassment might have been produced. It is hoped however that the names employed on the present occasion are sufficiently plain and explicit.)

* Elements of Medical Statistics, 1829.

† See his Treatise on Consumptive Diseases, p. 105.

HEADS OF THE VARIOUS DISEASES, DURING THE FOUR YEARS; 1826—9.	AGGREGATE OF EACH HEAD OF DISEASE, FOR THE CORRESPONDING MONTHS OF FOUR YEARS, VIZ. 1826—9												Aggregate of each
	Jan. 1826—9	Feb. 1826—9	March 1826—9	April. 1826—9	May 1826—9	June 1826—9	July 1826—9	August 1826—9	Sept. 1826—9	October 1826—9	Novem. 1826—9	Decem. 1826—9	
<i>Cephalitis & acute Hydrocephalus</i>			1	1	1		1					2	
<i>Cynanche parotidæa (Parotitis)</i>			1					1	1		1		
—tonsillaris—(Paristhmitis)		2	6	4	2	4	1	4	5	5	1	5	
<i>Bronchitis and Laryngitis</i>	4	5	4	8	2	2		1		1	3	1	
<i>Pleuritis and Pneumonitis</i>	7	5	6	4	7	10	9	7	8	6	5	6	
<i>Hepatitis, acute and chronic</i>	2	6	1	1	3	6	3	1	1	3	2	3	
<i>Peritonitis and Enteritis</i>	1	4	3	4	1	5	1	2	2		2	1	
<i>Nephritis, Cystitis, Hysteritis &c.</i>		5	2	2	1		2	1	1		1	2	
<i>Rheumatism, acute and chronic</i>	38	33	32	59	51	60	48	51	58	50	45	44	5
<i>Intermittent Fevers</i>	3	2	4	8	4	1	4	3	11	6		1	
<i>Remittent Fevers</i>	1	1	1	1					1	1	3	2	
<i>Synochus and Typhus</i>	88	74	64	49	57	75	37	68	76	83	112	78	8
<i>Common Catarrhal Fever</i>	63	73	75	45	28	32	22	26	25	31	71	59	5
<i>Rubeola</i>	2	1		1		2						2	
<i>Scarlatina</i>	1	3	2	2	4	1	3	4	1	3			
<i>Variola</i>			1		7	1	2		1		6	1	
<i>Varicella</i>		1						1					
<i>Erysipelas and Erythema</i>	2	4	3	1	1	1	3	2		4	2	3	
<i>Purpura</i>							1	1		1		1	
<i>Urticaria, Psoriasis, Prurigo, &c.</i>	1	4	4	2	1	4	7	9	3	5	6	1	
<i>Cough, without Fever</i>	74	96	70	56	47	42	25	25	22	36	73	74	6
<i>Whooping Cough</i>	1	1	3	3	2	1	1	3	1		5		
<i>Asthma and Dyspnœa</i>	46	47	34	31	20	7	7	10	12	16	37	30	2
<i>Aphonia and Dysphonia</i>	2		1					1	1	1		2	
<i>Phthisis, Atrophy, and Tabes</i>	22	20	24	28	31	19	20	12	11	10	13	18	2
<i>Scrofula vulgaris</i>	4		1	1	2		4		3		2	1	
<i>Hæmorrhagies</i>	3	4	6	4	5	8	7	4	6	2	7	6	
<i>Dyspepsia, Flatus, Pyrosis &c.</i>	11	9	21	17	24	14	20	22	25	20	12	8	2
<i>Icterus</i>		2	3	1	1		1	1	3		4	3	
<i>Cholera</i>	1						4	21	12	5	1	1	
<i>Diarrhœa</i>	12	9	16	13	11	16	18	20	20	27	15	14	1
<i>Dysentery, acute and chronic</i>	14	9	8	9	6	6	16	53	118	46	23	15	3
<i>Obstipation of the Bowels</i>	25	24	50	52	71	75	80	92	110	80	55	41	7
<i>Colic</i>	4	7	6	8	7	4	9	6	2	4	11	4	
<i>Verminatio</i>	3	3	4	7	4	3	4	6	4	1	2	5	
<i>Hæmorrhoids</i>		1	5	1	2		1	1		1	2	1	
<i>Hypochondriasis and Melancholy</i>			2	3	5	5	3	3	1	3	2	1	
<i>Head-aches and Vertigo</i>	1	4	4	2	9	2	8	1	6	7	4	3	
<i>Apoplexy</i>								1					
<i>Paralysis, general or partial</i>	1	5	2	6	6	1	4	4	3	4	7	7	
<i>Epilepsy</i>	4		1	4	3	2	1		6	2	1	1	
<i>Hysteria</i>	4	2	1	1	1	2	3	2	1	1		2	
<i>Chorea</i>	1	4	1	3	2	4	2	2	2	3	2	1	
<i>Convulsio infantium</i>	1	2											
<i>Palpitatio cordis</i>			1	1	4	2					2	2	
<i>Sternalgia, sive Angina Pectoris</i>			1	2								1	
<i>Neuralgia faciei</i>			1							2			
<i>Pleuralgia, acute and chronic</i>		1	1	4	2	1	1	1	1			8	
<i>Diabetes</i>			1	1				1			1		
<i>Ischuria and Dysuria</i>				2	2			1	2			1	
<i>Dropsies</i>	8	10	8	8	13	6	9	10	6	10	12	10	11
<i>Amenorrhœa and Dysmenorrhœa</i>	2	2	5		4	2	7	3	4	10	7	1	4
<i>Leucorrhœa and Blenorrhœa</i>		2	1		3	2	1	1			3	1	1
<i>Secondary Syphilis</i>	2	3	6	6	5	4	6	2	3	5	5	1	4
<i>Bronchocele</i>			3								1	1	
<i>Dentition</i>			1		1				3				
<i>Abortus</i>								1					
<i>Poison</i>					1								
TOTAL	459	490	502	466	464	432	406	492	582	495	569	476	583

The Physicians' patients of the Manchester Infirmary and Dispensary are distributed into the following four classes:—*In-Patients*, who are accommodated in the House; *Out-Patients*, who come up for advice and medicines; *Home-Patients*, who are visited at their own abodes; and *Fever-ward Patients*, who have been sent to the House of Recovery. The above table includes all patients of the aforementioned classes, who have come under the care of the author of these observations, during the four years preceding last new-year's-day;—rather less than one third of the whole period he has been, unworthily he confesses, attached to the noble institution which is proud to exhibit on the register of its medical officers the names of Percival, Ferriar, Charles White, Bardsley, Holme, Henry, Roget, and Simmons, and which yearly affords attention to upwards of *eighteen thousand* patients.

There are some diseases of which the foregoing table affords a very insufficient index. *Gout*, for instance, is not to be found in it; nor have I ever seen such a case among the labouring classes;—although I suppose, from the hereditary character of the disease, that it *might* show itself in a labouring person, whose father or grandfather had been wealthy, luxurious, and *arthritic*.

Of *varicella*, *scarlatina*, *rubeola*, and *hooping-cough*, the table presents but a very limited number; from causes sufficiently obvious to practitioners.

Scarlatina I have never seen fatal but once; and that was in an adult, who had been sent to the House of Recovery by a private practitioner after all hope had been given up.

The cases of *rubeola* have been mostly of the sequent symptoms; and few cases can be more distressing than many of these. I am not aware that it has been yet made public that, some time ago, in this town the most unpleasant cases occurred of mortification after measles. The alveolar processes were all destroyed; and, in one case, the most horrible I ever saw, the whole of one side of the face was entirely gone before the child was relieved by death. These cases were in the hands of different practitioners: and, in some of them, I know that not an atom of mercury had been exhibited.

Of *hooping-cough* I should wish to observe that I have attended one family in which the progress of this complaint was completely *suspended* by the *scarlet-fever*; after the termination of which the *hooping-cough* resumed its sway, and was not got rid of except in the usual tedious way.

The table presents but a small number of cases of *intermittent fevers*. In fact, such fevers never have their origin in Manchester or the immediate neighbourhood. They are mostly

seen in Irishmen who have been working at the harvest in Holderness, Lincolnshire, or Cambridgeshire. Some of these persons, who have been exposed to the influence of marsh miasmata in Autumn, are not attacked by the complaint until the February, March, or April following, when frequently there prevails an East, or North-east wind. One case of quotidian, I may mention, was rapidly cured by the sprinkling of a few grains of sulphate of quinine upon a blistered surface, prepared for the purpose. It is hardly necessary to say that this plan is originally French, but has not, as far as I know, been yet generally followed in England.

Of some diseases the table may be considered as a very sufficient exponent. Such are obstipation, diarrhœa, dysentery, continued-fevers, asthmas, rheumatisms, catarrhs, coughs.

The *rheumatisms* were mostly chronic or sub-acute; and a considerable number of them *in-patients*, who had come from a distance. Many of these had been affected for six or twelve months, and some even for two or three years. Cases of *acute* rheumatism are with us rather unfrequent;—and indeed it is somewhat surprising how few cases of active or entonic inflammatory disease of any kind we see in a large manufacturing town, such as Manchester.

The cases of *obstipation* were mostly in females, and those somewhat advanced in life. They were generally *out-patients*. It is astonishing what a train of vague complaints attend these cases. Headachs, listlessness, loss of appetite, flatus, pains in the stomach, side, and abdomen, œdema of the lower extremities;—all calculated to puzzle an inexperienced person, until he has put the question as to the state of the bowels, and has received an answer which is sufficient to develope the whole matter. It will be observed that cases of obstipation increase regularly from the beginning of January until the end of September, and then decrease gradually to the end of the year. This might have been expected; as an increased temperature and dryness of the atmosphere are favourable to that determination to the skin which certainly lessens internal action and internal secretion;—whilst cold, damp weather has the reverse effect.

On the other hand let the reader please to observe how remarkably *asthma* and *dyspnœa* fall off in number from January to June and July, and then as remarkably increase until December. Indeed July is decidedly the most healthy month in the year; for although the days are then excessively hot, they do not alternate with nights that are damp, cold, and even frosty, as in some other months.

Nearly the same observations as those just made, are applicable to *catarrhs*, *coughs*, and *continued-fevers*. They all fall to about the lowest number in the month of July.

Dysentery, on the contrary, gradually increases in its numbers from the end of June to the end of September, and then as gradually subsides until June again. The major part of the dysenteries occurred in 1826, when we had a very hot and a very dry season. In 1829, when we had a very cold and wet season, we had very few dysenteries. How is the anomaly to be accounted for? Hot, dry summers, I am persuaded are favourable to health; cold, wet summers are unfavourable. It has been said that the dysenteries of 1826 arose from the great use of oatmeal which was distributed by the charity-committees in that period of unusual distress. Some of us may remember the serious effects produced, especially in London, in a time of great scarcity, in the year 1800, by an act of parliament, well intended no doubt, which prohibited the dressing of wheaten flour, further than the removal of the mere outer shell or husk of the grain. The consequences were so inconvenient as to render the hasty repeal of the act absolutely necessary. It may perhaps be permitted to throw out a hint, which is done with the most perfect respect towards the parties concerned, that on a future occasion of great general distress among the working classes, wheaten flour of a moderate fineness should be substituted for oatmeal. It will probably be found as economical in the end. The stomach and bowels do not brook hasty changes of food; but wheaten flour, even not *very* highly dressed, will generally be found not to disorder any one.

Continued-fevers, both *synochus* and *typhus*, were prevalent in 1826, and were comparatively rare in 1829. What are the circumstances which cause the generation and promote the spreading of such fevers is still a matter of obscurity. Sometimes there has appeared reason to believe that warm, wet weather with the prevalence of distress among the poor is an undoubted cause. But certainly in the summer and autumn of 1829 we had very wet weather, which, though cold for the season, was warm enough for the generation of contagious miasmata; yet we had little or no fever. There must be a peculiar, occult, yet powerful cause existing in the particular state or constitution of the atmosphere in different years or in different times of the same year. This was observed and clearly pointed out by the sagacious Sydenham, a man like whom there arises hardly another in a hundred years. "If one were to examine all the branches of physic," says he, "nothing, perhaps, would appear so surprising as the different and perfectly dissimilar face of epidemic diseases; which do not so much relate to, and depend upon, the various seasons of the

same year, as upon the different constitutions of different years."—"And though I have carefully observed the different constitutions of different years, as to the manifest qualities of the air, that I might from thence discover the causes of the so great dissimilitude of epidemic diseases, yet I must own, I have hitherto made no progress; having found that years perfectly agreeing as to the manifest temperature of the air, have nevertheless produced very different tribes of diseases; and *vice versâ*."—Since Sydenham's time we have really made no progress whatsoever in this matter.

The cases of *hypochondriasis* were among tailors, shoemakers, and weavers; but, within the sphere of my observations, shoemakers have been of all persons the most subject to this complaint. In this conclusion, so different from the general notion, I was agreeably surprised to find myself fully confirmed by my very intelligent colleague, Dr. Lyon, as I have learned from a conversation with him. I suppose the sitting, stooping posture in which shoemakers work, may partly account for the fact. But, how is it they are more frequently affected than tailors? Perhaps the circumstance that tailors generally work in company, and shoemakers more usually alone, may afford some explanation.

Cases of *secondary-syphilis* within the sphere of my practice have been mostly in married females; and I am convinced from my own observations that such persons may be affected with secondary symptoms in a perfectly innocent manner, and without the occurrence of any primary symptoms. I think I have observed the fact, that, if either party in the marriage-union be affected with secondary syphilis, the female, though she may become pregnant, never carries the child to the full time, nor brings it forth alive.

The *hæmorrhagies* have been mostly of the atonic or passive character, arising from debility and the consequent giving way of the extreme vessels. This species of hæmorrhage will on no account admit of venesection. In *hæmoptysis*, or the spitting of blood, there is room for a double error. First, the blood does not always come from the lungs, but, occasionally, from the back of the nostrils, the pharynx, or the fauces; and, when small in quantity, will prove of no consequence, being easily arrested by styptic gargles or lotions. Secondly, when the blood does come from the lungs, if the pulse be slow and feeble, and if there also exist other signs of general debility, then venesection, especially if repeated, is almost certain death. I recollect a case of this kind, in which venesection, acetate of lead, sulphate of zinc, and sulphuric acid had all failed, and in which I had the pleasure of effecting an early and com-

plete cure by the exhibition of pretty large doses of the sulphate of quinine.

Of *imitative-diseases* I have made no mention in the table separately. They are put down either under the head of the disease imitated, or, otherwise, under that which was suspected to be the origin, as hysteria, hypochondriasis, vermination. *Feigned diseases* we are also not unfrequently troubled with, especially among the *in-patients*; but as the detection of them is not always either easy or certain, they are included among the diseases which the impostor was most successfully pretending to. In such cases the physician has the difficult task of steering between the danger of too easy a credulity, and of too much severity of decision.

In conclusion I wish to observe that, although I have endeavoured to render the foregoing table as correct as possible, yet I do not pretend to say a mistake of judgment may not have occasionally occurred. It is not always easy to determine the seat and nature of disease; or to ascertain, at the *first* interview, by the diagnostic symptoms, what is the appropriate designation. But, in the business of a large establishment it is generally necessary to come to some determination upon this point, *at once*; lest the register of the nomenclature should be afterwards forgotten, or, as it often happens, no further opportunity should present itself.

There remains another difficulty, and it must be left to the profession to estimate its amount; that of avoiding the bias naturally received from the prevailing current of medical opinion as to the seat, nature, and designation of disease. Diseases and remedies change with changing times. There were formerly diseases which are now no longer seen; and we now see diseases which were unknown to the ancients. And so it is with remedies. They have, each its day. They shine for a season, and then give place to others. Some rise again; some are dismissed, perhaps for ever. As Lucretius, the poet of physicians, beautifully expresses himself on a parallel occasion.

—“ sic rerum summa novatur
 “ Semper, et inter se mortales mutua vivunt.
 “ Augescunt aliæ gentes, aliæ minuuntur:
 “ Inque brevi spatio mutantur sæcla animantûm;
 “ Et, quasi cursores, vitæ lampada tradunt.”

LIB. II.—74.

ART. III.—*On Deformities of the Human Fœtus*. By the late WILLIAM HEY, Esq., of Leeds, F. R. S., &c. &c.

It is almost universally received as a truth founded on experience, that the fœtus in utero may be marked, deformed, or

mutilated by any sudden agitation of the mother produced from fright or external injury: and this opinion is so firmly established, that it is frequently the source of much uneasiness to a tender parent, and even increases the real dangers attendant upon the pregnant state.

This subject deserves a serious investigation: for if it should appear to have been received upon insufficient evidence, a discovery of the fallacy may contribute greatly to the relief of many of our fellow creatures.

Before I proceed to examine the evidences of this supposed fact, I shall state the case more particularly; and shall make a few remarks on the process of the human mind in reasoning from experience.

The received opinion is this, that the fœtus in utero is not only liable to be affected in general, by any thing that greatly agitates the mother; but that the specific injury received by the child corresponds with that inflicted upon the mother. As for instance, it is believed, that if the mother is much surprised by a bunch of fruit thrown against any part of her body, the fœtus will, or at least frequently does receive an indelible impression upon the corresponding part of its body; and that this mark shall evidently appear to have arisen from the impression made by the fruit upon the mother, not only in having the exact appearance of the fruit, but also in undergoing a change of color similar to that of the fruit in ripening, and synchronous with those changes produced in the fruit by the seasons. Impressions upon the skin of the fœtus are supposed likewise to be made by small animals thrown at the mother, so that if the mother has been hit by a mouse, for example, the figure of that animal shall appear upon the child, and upon that mark, the skin shall be so far changed, that the cuticle shall be covered with down instead of the natural hair of the human body.

It is asserted likewise, that a wound made on any part of the mother's body shall inflict a corresponding wound on the fœtus; that is, a real division of the skin and flesh of the fœtus, attended with the same appearances as those found on the mother, and proceeding in the progress of healing in the same manner.

It is farther believed, that the very sight of a disgusting object shall, by the surprise of the mother, produce even a complete mutilation in the infant, so that a child has been born with the want of a leg or arm, from a fright which the mother sustained, by seeing unexpectedly the stump of a maimed person, who had lost one of those limbs.

These various injuries to which the fœtus in utero is liable,

are not supposed to be confined to any period of pregnancy, but are said to be capable of happening at any time before birth; even when every part of the fœtus is completely developed, and is possessed of its due form, size, and texture.

In these cases it is not supposed that the event is produced by any immediate miraculous interposition of the Deity, but that it comes to pass in the ordinary course of nature, and does not contradict any of the known established laws of the animal economy.

In my investigation of this subject I shall adduce no arguments *à priori* to shew, that these supposed facts are either impossible or improbable in their own nature. I am well convinced, that all our knowledge of natural things must ultimately rest upon the simple, but firm basis of experience; and I am satisfied, that it is from the constant concurrent existence of events that we gain the very ideas of cause and effect. But then it is the business of philosophy and common sense to take care, that the rare or occasional concurrence of any two events do not lead us to conceive of them, as standing in this relation to each other. Without this care our knowledge will become uncertain and chimerical; our conclusions will be irresolute or erroneous; and our assent will degenerate into a childish credulity.

“So ardently,” says Dr. Reid, “do we desire to find every thing that happens within our observation, thus connected with something else, as its cause or occasion, that we are apt to fancy connections upon the slightest grounds. I remember, many years ago, a white ox was brought into this country, of so enormous a size, that people came many miles to see him. There happened some months after, an uncommon fatality among women in child-bearing. Two such uncommon events following one another, gave a suspicion of their connection, and occasioned a common opinion among the country people, that the white ox, was the cause of this fatality. False hypotheses, and true principles in the philosophy of nature are built upon the same foundation; and are distinguished only according as we conclude rashly from too few instances, or cautiously from a sufficient induction.”—*Inquiry into the Human Mind*. p. 55, 56.

It is astonishing to consider how capable we are of imposing upon ourselves, and how ready to foster the imposition, when the mind is unduly influenced by self-interest, by a superstitious regard to the antiquity of our opinions, or a too eager search after novelty. We shut our eyes sometimes against the clearest light, and our very abilities themselves often make us the more dexterous in self-conceit.

In our ideas of cause and effect, we do not always suppose the latter to be immediately connected with the former; in many instances, we conceive the existence of the latter to be remote from the former; yet our conclusions may be just, even where we cannot perceive the intermediate events which connect them; provided we know this connection to be certain, and that the latter never does come into existence without the former. Truth does not require that we should refuse to acknowledge any event to be the cause of a subsequent event, till we can discover something in the cause which shall appear to us adequate to the production of the effect; but a discovery of the connection is absolutely necessary to our forming a rational idea of cause and effect. We can discover no power in the congress of the sexes adequate to the production of so curious a machine as the animal frame; yet since we certainly know that this inimitable machine is never produced without such congress, we are authorized to consider these events under the relation of cause and effect. And could we discover the same connection between the deformities of the fœtus and the impressions made upon the mother during pregnancy, the common opinion would be as just in the latter case as it is in the former. How far this connection does really subsist, we will now consider.

The facts alleged respecting the deformities of the fœtus are false. It is true that children do come into the world having the skin marked in patches with unnatural colors, which, with some vigor of imagination may be thought to resemble various kinds of fruit, but I have never yet seen a mark that bore such a resemblance of any fruit; that the same opinion would have been pronounced concerning it by any three indifferent persons, unacquainted with the fears of the mother, or the incident said to have produced the impression.

I have often seen the human cuticle covered in places with fine hair resembling down, but never saw this down assume the shape of any known animal. Much less have I seen any changes in these marks, which had the least relation to the gradual alteration effected by time in the vegetables or animals, which the marks were thought to resemble. I have had the opportunity of examining many of these supposed impressions and resemblances, but never saw them undergo any other change in color or appearance, than such as occasional heat or cold would produce.

It is true that children are born with preternatural tumours on many parts of the body; with additional or mutilated members; and with such defects in various parts, as may have some distant resemblance of the frightful objects or injuries

supposed to have caused them: but the disparity in almost all the cases that have come under my inspection has been sufficiently apparent to convince me, that prepossession, rather than candid observation, has led to the conclusions usually formed in such cases.

The objections which I have to make against the supposed cause of these deformities may be comprised under two heads. First, that the known laws of the animal economy must be infringed, upon the common supposition. And Secondly, that the concurrence of these deformities with the fears or hurts of the mother are so rare, that we are not led by the principles of just reasoning to consider them as cause and effect.

1. There is a regular progress in the growth of the fœtus extending to all parts of its body. Every part of a limb acquires its proper shape and size at the same time, and there is in every part a gradual advance towards maturity. Now if we examine a fœtus deformed by any additional member, we shall generally perceive, that the adventitious member is subject to this general law in the animal economy. If there are more than the usual number of fingers, for instance, as was the case in a child lately shewn to this society, the additional fingers appear to have had the same origin with the rest: the nails appear on them all at the same time, and at whatever period of pregnancy the infant is born, there appears to be an equal maturity in the natural and preternatural parts.

Are not we necessarily led by these observations to the idea of an *original* mal-conformation? If this deformity had arisen from some fright which happened after the natural fingers had been completely formed, the additional ones must have had a very different appearance from the rest, according to the above-mentioned law of nature.

2. It is well known that the bones of a fœtus, while enveloped in their membranes, will remain for many years in the body of the mother without corruption. The case of extra-uterine fœtuses demonstrates this. The bones, even when separated from their usual coverings, have been known to make their way gradually through the belly or anus of the mother, after considerable intervals of time. Yet it was never known, I believe, that the bones of any fœtus mutilated by natural deformity were discharged along with the fœtus itself. The fœtus lately shewn to you wanted a considerable portion of the bones of the leg, yet it was expelled without being accompanied with any bony fragments, which might lead one to conceive that the bone now wanting had never existed. I have seen more fœtuses than one, with the upper hemisphere of

the brain uncovered by bone, yet no fragments of the cranium were found with the foetus.

Another law of nature must therefore be broken, by admitting that this deformity can happen, after the limbs have been completely formed.

3. In all deformities that have the resemblance of a wound, we find the parts healed in a manner not agreeable to the natural process of healing; as in the hare-lip. No division of the lip healed according to the uniform laws of nature can put on the appearance which is observed in this deformity. To explain this argument it is necessary to observe, that the lips are in part covered with a kind of skin peculiar to themselves, which forms an elegant border to the mouth. This skin, when the lips are divided by a wound, does not pass along the margin of the divided parts, but the wound when healed is covered by a common scar, such as covers a healed wound in any other part of the body. But in the hare-lip, that red covering of a determinate breadth, skirts the parts divided by nature, and covers the preternatural as it does the natural divisions of the lips. Plainly pointing out, that this deformity could not have been produced after the lips were completely formed, but must have taken place from the first formation.

4. These instances may suffice of cases open to common observation; but anatomy makes us acquainted with many other circumstances utterly irreconcilable with the common opinion concerning deformities. There is a disease called *spina bifida*, which exhibits externally a tumour on the back of a newborn child; or if the skin is burst, a small wound appears, and a hole may be felt in the back-bone. This has been referred, I doubt not, to some wound or other injury which the mother had suffered in her back. But a dissection of the parts shews, that no injury after the spine was perfectly formed could have brought it into that state which constitutes this disease. For there is either a small hole through which some part of the spinal marrow, with a serous fluid, issues out; or the bones of the spine are regularly divided, as at the rump, and the spinal marrow takes an extraordinary course, without any appearance of injury. There are likewise abundance of interior *lusus naturæ*, as they are called, irregularities in the number, structure, and position of the parts, which seem not to have the most distant relation to the fears, or accidents of the mother.

There are not unfrequently found additional or defective muscles; irregularities in the course, ramification, or number of the arteries, and the like. And sometimes, as in the case lately presented to this Society, the most necessary vital organs,

and characteristic external parts are wanting: so that the human fœtus has scarcely retained any of the distinguishing features of humanity. But what kind of injuries or frights must they be that can deprive a child, completely formed, of its brain, its heart, stomach, and lungs; its eyes, nose, mouth, and ears; and yet leave no vestiges of these once subsisting organs? It would surely exceed the belief of the most credulous, or prepossessed, to refer these defects to any thing less than an original mal-conformation.

2. But on supposition that the commonly received idea of the origin of natural deformities were not repugnant to the animal economy; are these deformities always, or commonly preceded by some fright of the mother? And are these agitations in the mother constantly or usually followed by some deformity in the child?

I know of no well authenticated testimonies that would lead one to believe either the one or the other. My own experience directly contradicts them both.

1. It is now a quarter of a century since I became engaged in a profession, which has given me an opportunity, not only of seeing many deformities in new born children, but also of inquiring minutely into the state of the mother during pregnancy, both with relation to the injuries she had received, and the fears which had been excited. In no case of deformity, where I have had an opportunity of inquiring early into the condition of the mother during pregnancy (perhaps before the deformity was known to her) has there occurred any circumstance, which could lead one to attribute the deformed state of the child to the fears of the mother. Nay, in almost all these cases which I have met with, the mothers have assured me, that they never were frightened or hurt during pregnancy. It has been matter of surprise to me, that the mothers of such infants have not expressed those very common, though groundless apprehensions, which so very frequently cause some uneasiness to pregnant women.

2. On the other hand, the instances are very numerous of pregnant women being hurt or frightened, without the least injury to the fœtus. I have seen many instances of great anxiety, on account of some accident which made a sudden impression upon the mother; but I never yet, that I remember, saw such fright followed by a deformity of the child.

In short, were I to frame an opinion founded solely on my own experience, it would be this: that women are more apt to have deformed children when they are not frightened during pregnancy, than they are when such frights have occurred. This is a fact which has rather surprised me; yet I have no

reason to look upon it in any other light, than as matter of mere accident. However, I make no doubt that the fear and the deformity have often concurred. Amongst the vast number of pregnant women, which is always existing, some cases will be occurring to favor the common opinion; these are spread abroad with rapidity; they are often talked of, and long remembered; but until the concurrence of the fright and deformity is better established, the common opinion seems to rest on no better foundation than that, which resolved all the miscarriages in Scotland, in a certain year, to the appearance of a white ox.

Some persons, I believe, have thought well of the opinion I am opposing, from a supposition that the sacred writings have given countenance to it. When Jacob placed his pilled rods before the cattle, then the young ones were spotted and ring-straked. To this authority I wish to pay the most profound deference; and had the determination of this question been really matter of divine revelation, I should not have set up any conjectures of my own in opposition to it. But I think the Bible contains nothing contrary to the sentiment I have been defending. For not to urge, that there is an appearance of miraculous interposition in favour of Jacob, which might coincide with his own opinion, or that which was then prevalent, on this subject; it appears, that the effect was produced, not *after* but *during* conception. “And the flocks *conceived* before the rods, and brought forth cattle ring-straked, speckled, and spotted.”—Genesis, xxx. 39. Allowing therefore that the appearance of the rods was, in the most strict sense, the cause of those particular colors in the cattle; yet the impression producing those colors must have happened at the first formation, which is the time, when, according to my idea, the future form of the foetus is determined. If then the sacred writings meant to say any thing on this subject, their decision is rather in favor of the notion I have attempted to support.

(We are indebted to the kindness of Mr. Hey, of Leeds, for permission to insert the above posthumous essay of his father, which is pervaded by the same simplicity and philosophic love of truth, that characterise the writings of its distinguished author.)

ART. IV.—*An Inquiry into the Sources of Animal Heat.*

By JAMES CARSON, M. D., of Liverpool.

It is well known, that the bodies of animals are endowed with the faculty of preserving the same heat in every variety of climate. The blood of the bear, prowling over mountains of

ice in high northern latitudes, is as warm, as it is, when the same animal has been transported to the south of Europe, or even into the Torrid Zone. That a fluid, separated only by a thin membrane, from a cold which would instantly convert that fluid, if extravasated, into a solid rock, should retain its liquidity and warmth, is a matter so wonderful, as to resemble the direct and constant operation of miraculous power, rather than any of those processes, by which the physical government of the world is, in other parts, conducted. It is not surprising, therefore, that this subject should, in all ages, have engaged the attention of the curious. But it is not only as a curious speculation that it is interesting. Animal heat concerns us in a more intimate way. We carry it about with us every day; we are reminded of its importance by every wind that blows; and we are satisfied, by early experience, that without it, life itself would soon be lost, or retained only in misery. Since the important discoveries of what was called latent heat by Dr. Black, and of the composition of the atmosphere by Scheele, Lavoisier, and Priestley, the causes of animal heat have been investigated with increased industry. By those great discoveries, they seemed to be brought within the limits of that domain, over which the intellect of man is permitted to range. Since that memorable period, it may be said that the furnace has not ceased to burn, nor recording pages to be moist, in any region on which the rays of science have fallen. Notwithstanding animal heat has been long a favorite subject of investigation among philosophers; and though modern Chemistry loudly boasts that she has supplied the means of unveiling this great secret of nature, it must be acknowledged that the subject is still involved in obscurity; and the student, after having made himself acquainted with all the views, that have been taken of the question, and after having long and patiently attempted to reconcile discordant statements, and to select the true conclusion from many, all apparently deduced from faithful experiment, rises from the inquiry with a mind stored, it may be, with much important knowledge, but full of perplexity; and, with respect to the object of research, as little satisfied as he was when he commenced the inquiry.

The following observations will, I trust, be found to throw some new light on the subject.

As in almost all the theories which have been constructed, and particularly in the view which I am about to submit to the public, the lungs, in the Mammalia at least, are supposed to be the organs in which the heat is evolved and regulated, and from which it is transmitted to the rest of the body; it seems requisite to commence the inquiry, by a short description of the

substance of the lungs, and with an account of their mechanism, so far at least, as it may seem to be concerned in the present inquiry.

The lungs are familiar to every one; they are that large pale-red spongy mass, which in the shambles is daily to be seen suspended by the windpipe. In this situation, they are rough, corrugated, angular, with some deep indentations, and greatly reduced in volume. They are then in what is termed a state of collapse. In the living body, they fill nearly the whole of the chest, and are, in that state, expanded into dimensions far more extensive, than those which they occupy in a state of collapse, or that to which, when freed from other connections, they naturally recede. As the dimensions of the chest, assigned for the occupation of the lungs, vary considerably in the different states of inspiration and expiration, the lungs, accompanying the variations of the chest, with the parietes of which they are at all times in contact, become considerably more expanded in all directions during inspiration, than during the lowest stage of expiration; but even in this last stage, they are always of a much greater volume, than that which belongs to them in a state of collapse. The lungs are a double organ consisting of two lobes, which are separated from each other by an intervening membrane placed vertically in man, and passing from the breast-bone to the spine in the middle of the chest. These lobes communicate with each other only by the windpipe, which is a passage common to both. The lungs are suspended from the inside of the chest at the top, but at no other place do they, in a state of perfect health, adhere either to the parietes of the chest or to the mediastinum; but perform, in the process of respiration, a sliding motion along the surface of each.

The lungs may be expanded into dimensions far more extensive than those to which they naturally recede in a detached state, and may be retained in various degrees of that expansion, during the whole course of a long life, without any injury to their structure. This property they enjoy principally in consequence of the elasticity of their structure. Different substances seem to be possessed of different kinds of elasticity. Some substances, after being compressed into smaller dimensions, resiliate when the compressing power is withdrawn, into their former volume, without including any internal voids or interstices which require to be filled by a foreign body. To this class of substances belong the gases. But the elasticity which appertains to the lungs, to gum elastic, to sponge, and other substances of that description, is regulated by different laws. If a piece of lung be stretched in length beyond its

natural limits, it becomes proportionally thinner; and if pressed within those limits it becomes thicker. In both situations it fills up the same space. If a substance of this nature be extended into a larger volume, having all its external surfaces increased, it can only assume this volume, by the formation of internal cavities, the solid dimensions of which will be together equal to the solid dimensions of the difference between the two volumes. These cavities must necessarily be occupied by some extraneous substance.

The lungs of the unborn foetus are in the most complete state of collapse; they contain in that situation no air, and their specific gravity is greater than that of water. Though all the vessels may be supposed to be formed, which by their dilatation after birth, permit the lungs to be expanded into a much greater volume, these vessels have then a very minute caliber, filled with blood and mucus. After birth, air finds access into the vessels of the lungs, and assists in filling the internal cavities, now greatly enlarged.

The power with which an elastic substance resiliates will be, in some measure, proportioned to the degree of stretching, to which it is at the time subjected. If it be supposed, that all parts of the lungs are equally elastic, and that, at every stage of dilatation, the power by which they are stretched is equally distributed throughout the whole substance, it follows, that all the fibres composing the lungs will be equally stretched. For, if any part of the lungs were more stretched than another, a power would be generated in that part, which would act against the weaker power in the adjoining substance, until a balance was restored, which would be, when the stretching of the different portions was equal.

It results from these suppositions, that when the lungs are expanded to any given degree, the aggregate of the internal cavities, or of the caliber of vessels which belong to any portion of lung, is equal to the same aggregate in any other portion of the same extent.

It also necessarily follows, that at any given stage of the dilatation of the lungs, the aggregate amount of the vascular cavities is fixed, and that this amount is equally distributed throughout the organ. The vessels which enter into the structure of the lungs, and which by their dilatation permit the expansion of this organ, may, at any stage of that expansion, be compared to rigid tubes the caliber of which is fixed and independent. But if another and a higher stage of expansion be taken, the caliber of the vessels will still be fixed, and will resemble rigid tubes of a greater size.

We are, in the next place, to examine the vessels of the

lungs, or those varying cavities which are placed in the interior, and which are necessary to the movements of these organs. The chief of these are the bronchi or air vessels, and the pulmonary arteries and veins, with their ramifications. Of these the description need only to be short and general; and first with respect to the air vessels.

As soon as the Windpipe enters the chest from the neck, it divides into two branches, one of which goes to the right, and the other to the left lobe of the lungs. Each of those branches ramifies into a number of smaller, and these again into others smaller still; and thus the process is continued, till the ultimate ramifications become extremely small and infinitely numerous. The structure of these vessels is at first like that of the trachea cartilaginous, but the cartilaginous structure soon disappears, and is succeeded by that of simply elastic membrane. The ramifications of the bronchi exist in every and the most minute portion of the lungs. Indeed with some interstitial matter, they seem to compose the chief part of the pulmonary structure. They freely communicate with each other by means of anastomosing branches. With respect to their terminations and communications, we shall afterwards have to speak.

The blood vessels are the pulmonary arteries and veins. The pulmonary artery arises from the right ventricle of the heart and soon divides into two branches, of which one goes to the right, and the other to the left lobe of the lungs. The extreme and most minute pulmonary veins uniting in parcels to form branches, and these again uniting to form larger, at last end in four trunks, which pour their contents into the left auricle of the heart.

The extreme, or, as they are called, capillary terminations both of the arteries and veins have two communications which require to be noticed. The arterial capillaries have a connection with the venous. Through this connection the blood passes, in the course of its circulation, from the arteries into the veins. But besides these, the pulmonary arteries, as well as those belonging to the larger circulation, have terminations through which red blood is not transmitted. These open into the internal surface of the bronchi, and from their office are called exhalants. It is now well established, that the veins are also well furnished at their extremities with openings, which do not admit, in ordinary circumstances, the red part of the blood. That the pulmonary veins are furnished with such openings, sufficient proof will be supplied in the sequel. These openings perform an office the reverse of that of the arterial exhalants. They take up substances from the surface of the bronchi, and on that account have been termed

imbibers. It does not seem necessary for our purpose, to give any account of the nerves, or of the lymphatic vessels of the lungs.

The vessels now enumerated form the internal cavities, the dimensions of which vary, according to the varying volume of the lungs. Without such cavities it is evident that the lungs could not be expanded, nor the chest dilated by any moderate force.

But to enable the vessels to accommodate themselves to the various sizes required for the office assigned to them, there must exist a supply of materials *ab extra*, from which these cavities, increasing with the volume of the lungs on inspiration, may be readily filled; and also convenient passages, through which the superabundant substance may be discharged, when this capacity decreases, with the decreasing volume of the lungs in expiration. As the air vessels communicate freely with the windpipe, and that with the external air, there exists a ready channel, both for the reception and discharge of matter, according as they are made to assume a greater or a less capacity. But it is not quite so evident from what sources the materials are drawn, to allow the blood vessels to assume their share of expansion, which the structure of the lungs would appear to render necessary during inspiration; or through what channel, the superabundant contents of these vessels are discharged out of the chest during expiration. Neither can the matter supposed to be introduced into the increasing cavity of the blood vessels during inspiration, nor that discharged from the same, as it diminishes during expiration, consist of blood: for no blood can enter the pulmonary arteries, or be discharged out of the pulmonary veins, except through the portals of the heart. But these portals do not open and close in correspondence with the required periods of supply and discharge. The movements of the heart are not timed by the movements of the lungs. Four pulsations of the heart may generally be counted during each complete respiration. It may indeed accidentally happen, that a discharge of blood may be made into the pulmonary arteries, at the moment in which inspiration commences, but, at the same moment, an equal quantity is abstracted from the pulmonary veins to fill the enlarging auricle of the left side of the heart. Whenever then, a quantity of blood is thrown into the chest, an equal quantity is, in the same period, discharged out of it; and also every discharge of blood from the thorax is accompanied by the entrance of an equal quantity through another channel. The quantity of blood therefore at any time contained by the lungs does not appear to be at all modified by respiration.

We have been led therefore to look out for other channels, through which materials may flow into and be discharged from the blood vessels of the lungs, in the different stages of inspiration and expiration, and in our search after these, we have been conducted to that view of the origin of animal heat, which is now to be submitted to the candid consideration of the public.

I shall then, in the first place, exhibit the view which has at least the merit of simplicity. I shall then examine those opinions which may be supposed to constitute the present creed of philosophers on this subject, and, in conclusion, adduce those additional proofs in support of my own hypothesis, which there may have been no opportunity of introducing in the preceding examination of the opinions of others. This process will, I trust, altogether be found satisfactory.

As, during inspiration, the chest is at once both widened and distended, and the volume of the lungs becomes at that time greatly enlarged, the cavities in the interior of these organs are proportionally augmented. While these cavities are enlarging, the contents of them are subjected to a diminished pressure. To restore to the substances within the lungs an equality of pressure with that of the substances without them, the air rushes down the windpipe, and fills the enlarging air-vessels. But the inequality of pressure does not end here. The air-vessels are powerfully elastic and resist further distention. One part of the substance of the lungs becomes more stretched than another. In consequence, the contents of the blood vessels of the lungs are subjected to a less degree of pressure, than the rest of the system. Our observations on the effects of this diminution of pressure shall be confined, at present, to the contents of the pulmonary veins. In these circumstances, the air received into the windpipe will not terminate its progress with the bronchi. It will necessarily pursue the less resisted course, and passing through the openings between the bronchi and the pulmonary veins—openings now greatly enlarged—will enter into the cavity of the veins, and enable those vessels to assume that proportion of dilatation, which, during the increased volume of the lungs belongs to them. The air thus introduced by a thousand minute passages into the blood becomes intimately mingled with it. Partly by mechanical, and partly by chemical agency, a portion of this air, while the blood with which it is commixed is still in the lungs, is converted from the aerial into the fluid state. The consequence of this conversion is well known to be an evolution of heat. But all the inspired air is not converted into liquid in the pulmonary veins. After the passage of the blood out of

the lungs, a portion of it still retains the gaseous condition; it is mingled with the blood in the form of small globules, and in this state is transmitted by the heart into the aortic system. In its passage through this system to all parts of the body, it is gradually converted into a liquid form; as this conversion takes place, giving out heat. As, therefore, the stream of blood proceeds on its course from the heart to the extremities, it receives from itself a new supply of heat, and is thus enabled to preserve the same temperature, throughout a course in which its heat is rapidly conducted from it, into the surrounding substances. When the blood has reached the capillary arteries, the conversion of air into liquid may be supposed to have been completed. The blood thus passes from the arteries into the venous system. But, it is not the blood alone which at this part enters the veins. The animal fabric is in a constant state of renovation—of waste, and repair. The substances of which the living body is composed exist in that body, in a state, different from that to which their natural affinities would bring them. The waste of the system may be said to arise from the tendency, which the different parts of the body have, to yield to their natural affinities. Those substances which have yielded to their natural affinities, so as to become impure or offensive, require to be discharged. The important office of removing from the body the impurities which are the result of decay, is in a great degree performed by the veins. Some parts of the blood itself will, in every circuit, have undergone, from the causes which have been stated, the deleterious change which unfits it for longer residence in the system. Some parts of the solids will, in the same period, have undergone the same change. These being separated, are taken up by the imbibing ramifications of the capillary veins, and, along with the blood from the arterial capillaries, enter the red veins. The introduction of these results of decay into the venous blood is manifested by an alteration of its color. It is converted from a vermilion, into a purple hue. Loaded with whatever may be called excrementitious matter, it is returned to the right side of the heart, from whence it is thrown by jets into the pulmonary arteries.

When in the pulmonary arteries, in the period of inspiration, the blood is subjected, for reasons which have been assigned, to a diminished pressure. It is placed, as it were, in the exhausted receiver of an air pump. Under this diminished pressure, and at the temperature it possesses, gases are evolved from it, and a part of the blood is converted into air. In consequence of the great reduction of temperature accompanying the conversion of a liquid or solid into a gas, this evolution of gaseous

matter would soon terminate; but, at the instant, in which a part of the blood in the arteries is converted into air, air in the veins is converted into fluid; and, by this means, the heat of the blood in the arteries, during the period that it supports a diminished pressure, is kept up at the temperature, at which the ebullition is continued, by the conversion of the requisite parts of it into gas. Those parts of the blood which are yielding to their natural affinities, which are already in a state approaching to fermentation, those impurities with which the venous system is loaded, most readily, in these circumstances assume the gaseous form. By the formation of an elastic fluid, the pulmonary arteries are enabled to assume that augmented caliber, to which they are urged in consequence of the expansion of the lungs. They are thus qualified to take their share of the dilatation. In the succeeding expiration, the lungs, resiliating upon the pulmonary arteries, press these vessels into their former caliber; which, however, in the changed circumstances they can only resume, by the expulsion of some of their contents. In this state, the attenuated aerial matter finds a ready exit, through the capillary vessels of arteries which open into the bronchi, and which, in ordinary circumstances, do not carry red blood; and then, makes its exit through the windpipe. The blood now shows its liberation from the adulterations with which it was charged, by resuming the vermilion hue; by being converted from venous into arterial blood, and is again fitted to be the vehicle of heat and of nutriment to the whole system.

In this view of the subject, the lungs serve the double purpose of a furnace and a refrigeratory. Such an accumulation of heat, arising from the rapid conversion of a quantity of air into liquid, as might be destructive to the organ, is prevented, by the simultaneous conversion of a fluid into air in the adjoining vessels; and, unless an excess of heat was generated in the pulmonary veins, to be supplied to the blood rapidly cooling in the pulmonary arteries, that ebullition, supposed to be so necessary for freeing the venous blood from its impurities, would not take place.

According to the preceding view, the greater part of the air which we inspire, is received into the blood vessels of the lungs, and mingled with their contents; and gradually changing its form is circulated, with those contents, through the whole system. The part of the air which has been inspired is discharged from the windpipe in an undecomposed state. On the contrary, the greater part of the air expired has proceeded from the venous blood returned to the lungs, and consists of the usual gaseous products of the vegetable and animal fer-

mentation. These are carbonic acid gas, nitrogen gas, hydrogen gas, to which may be added a watery vapour, of which the source is more uncertain.

Having given an outline of our hypothesis, we are now to adduce the proofs by which we hope to establish the truth of the different parts of it. This attempt it seems advisable to commence, with an examination of the chief hypotheses which have been maintained respecting the sources of animal heat. It will be sufficient to confine this examination to some of those of a recent date, and having still a great share in the formation of the general opinion. For this purpose, we shall select the opinions of Lavoisier, and of Crawford. Theories, which superseded all the preceding, and of which all the subsequent are only modifications.

Having proved that combustion was effected by the union of oxygen with an inflammable body, and surveying, from the splendid edifice which he had raised on the ruins of the doctrine of Phlogiston (long deemed an impregnable fortress in the philosophical world) the extent of the sovereignty he had acquired in the natural kingdom, Lavoisier threw a penetrating eye upon the phenomena of respiration; and pursuing the analogies which appeared between it and the process of combustion, was led to the conclusion, that respiration was a slow combustion, by which animal heat was supplied, and consequently claimed it as a province of his own.

The atmospheric air had been ascertained to be composed of nitrogen and oxygen gases, in the proportion nearly of four of the former, to one of the latter. The air emitted in expiration, was found to be composed of nitrogen and carbonic acid gases. From these facts, it was inferred that the air inspired had undergone a decomposition, or a separation of its constituent parts, during its residence in the lungs; that the part consisting of nitrogen gas was returned unchanged, while the oxygen uniting with the carbon, supposed to float loosely on the venous blood, formed with it carbonic acid gas, which, along with the nitrogenous gas constituted the expired air. What seemed to give great force to this supposition was, that the first experiments on the subject made the consumption of oxygen just equal to that which was required to form the quantity of carbonic acid gas expired. Hatzenfratz found that the quantity of oxygen, which disappeared in the process of respiration, was greater than what was necessary to form the carbonic acid expelled. But a watery vapour was expelled also. The excess of oxygen was supposed to unite with the hydrogen (also according to supposition, floating loosely in the blood with carbon) forming water, which was discharged in the

shape of vapour. The heat evolved by the conversion of oxygen gas into a liquid, minus that quantity expended in converting the carbon with oxygen into carbonic acid gas, and the hydrogen, with oxygen into vapour, was supposed to constitute that heat, which being carried along with the blood in the course of its circulation, gave to every part of the body an equality of temperature, in all circumstances. The separation of the hydrocarburet from the blood was supposed to convert it from venous to arterial blood, and to change it from the purple to the vermilion hue.

Dr. Crawford of Glasgow, about the same time, or perhaps before Lavoisier, was led to the same views; but he carried his theory further than Lavoisier had done, and certainly gave it a more perfect form. He did not limit the production of heat to excess evolved in the reduction of one gas, over that consumed by the formation of others, but he contended that by the removal of hydrogen and carbon from the blood, its capacity for heat was changed; that in passing from venous into arterial blood, that capacity was lessened, and consequently by the same heat, a high temperature was produced. He further contended, that the capacity of arterial blood for heat continued to diminish as that blood advanced in the arterial system, and that in consequence the temperature of the blood was preserved, notwithstanding its necessary communication to the cooler substances, with which, in its course, it might be surrounded. This truly ingenious theory was received with great applause and high expectations by philosophers, and instantly conferred a high celebrity upon the name of its excellent author; a celebrity, which, though the doctrine itself has not stood the test of examination, will nevertheless, in consequence of the great ingenuity displayed, and the great light, which in the course of his inquiry, he threw upon the doctrine of heat in general, be transmitted to the latest generations.

The foundation upon which the doctrine of Crawford was raised—the diversity between the capacities of venous and arterial blood for heat—has not stood the test of the rigid examination to which it has been subjected. Indeed, if there is any difference in those capacities, that difference, I suspect, will not be found in favour of the hypothesis of Crawford. We have to return therefore to the narrower view exhibited by Lavoisier, and which, with some variations, is still the doctrine of the day.

The fundamental parts of this doctrine are, that two substances in the form of gas constituting atmospherical air are separated in the lungs; that the oxygenous part, after uniting

with the carbon or hydrocarburet floating in the blood, is discharged in the form of carbonic acid gas and vapour, and that the nitrogen gas, the other constituent of atmospherical air (for I pass over the small quantity of carbonic acid found in it) is returned with the newly formed carbonic acid gas and vapour, through the windpipe.

Such objections to this hypothesis, as appear to me to be insurmountable, present themselves at the very outset. The combination must take place with carbon, supposed to exist in the blood in a disengaged state, not by coming freely in contact with the air, but through an exceedingly thin, and it may be porous membrane, and must take place in a few seconds. The slight transient change of color, which is observed on the surface of venous blood contained in a bladder, exposed to a stream of oxygen gas, is the only fact by which this most improbable supposition is supported. But why does not venous blood assume the vermilion color, when exposed to an atmosphere of oxygen gas without any intervening membrane? Though it may redden a little on the very surface at first, it becomes in a short time, instead of arterial, more decidedly venous; instead of vermilion, its color becomes that of a deeper purple. What proof is to be found that carbon exists in a disengaged state in the blood? It is well known that carbonic acid is contained in the venous blood in great abundance. The experiments of Mr. Brande, Professor of Chemistry to the London Royal Institution, make the quantity to be four cubic inches of this substance, when converted into gas, to belong to every ounce of blood. Though I conceive the amount here stated to be greatly over-rated, there can be no doubt that carbonic acid exists in the blood, in considerable quantity. If I understand aright the doctrine of Berthollet, carbon could not exist in this state in an entirely disengaged form, it must already have combined with some oxygen, which would diminish the force of its attraction for the oxygen of the atmospheric air. But it is only the carbon in contact with the fine membrane that could be affected: what existed in the interior of the stream, how small soever, would not be combined. Such a rapid formation of so great a quantity of carbonic acid would be accompanied with other phenomena. There is no other known chemical operation, which, in all its circumstances, is similar to this now supposed. The only argument in support of it is, that oxygen has appeared, and can in no other way be accounted for. But this is a deceptive mode of reasoning, and can never be relied upon excepting in the science of pure mathematics. When Dr. Hales found that the venous blood, though flowing with the same velocity as

an equal column of arterial, had not the same momentum, it was this species of reasoning that induced that philosopher to conclude, that the motion of the blood was exempted from those laws, by which the motion of all other substances is regulated. But it is now known that the motion of this fluid, notwithstanding the correctness of Dr. Hale's experiments, is made in strict conformity to the laws of hydraulics. But proofs are supplied, I think, by Lavoisier's own experiments, that carbonic acid is expelled in breathing, in circumstances, in which the oxygenous part of the composition could not be supplied from the inspired air. In his remarkable experiments on guinea pigs, he found that air containing only one part of oxygen in fifteen, the rest being nitrogen, was sufficient for the support of these animals for any length of time, and with their usual vivacity, provided the carbonic acid that was formed, was instantly separated from the expired air, and prevented from being again inspired; and, in this case, the carbonic acid continued to be expired, in the same manner as when these animals breathed an atmosphere containing nearly one fifth of oxygen. No one will surely contend, that the oxygen necessary to form the acid, was in this case taken from the inspired air. When the proportion of oxygen is so small, its further separation from the nitrogen becomes an operation of great difficulty, requiring the most powerful chemical agents. Supposing, contrary to all experience, that the whole of this oxygen were separated, it would still be insufficient to form the quantity of carbonic acid, which seems to have been expired in as great a quantity as when the animal breathed an air containing many times the amount of oxygen. We have here then a decided proof, that the carbonic acid gas discharged in expiration does not always require the inhaling of oxygen for its formation. But it may be urged, that the inspiration of oxygen must take place in the lungs, as the nitrogenous gas is expired in a separate state, or in a state containing still less oxygen. But what proof is to be found that this nitrogenous gas is wholly the identical nitrogen that had been inhaled? The experiments of Jurine of Geneva afford, in my opinion, complete proof to the contrary. When that gentleman inspired an air consisting of pure oxygen, he found that the air expelled in the succeeding expiration, still contained nitrogen, and nearly in as great proportion as when atmospherical air had been inhaled; and further, when atmospherical air was breathed, a greater quantity of nitrogen gas was discharged in expiration, than had been admitted into the lungs in inspiration. In the first case, no nitrogen nor any thing from which it could be formed was inspired. The nitrogen gas expired must have

been derived from other sources than the air, and in the other instance, when atmospherical air was inspired, a portion, at least, of the nitrogen gas expired must have been derived from some other fountain, than the air inhaled in the preceding inspiration. Nitrogen gas therefore may be discharged without the necessity of supposing a decomposition of the air in the lungs. All the constituents therefore of the air expired, are expired, in certain cases at least, in which it is impossible they could, in any part, be derived from the air previously inhaled. There is no occasion therefore for the highly improbable supposition of a decomposition of the atmosphere in the lungs, to account for the phenomena of expiration.

Supposing still the theory of Lavoisier, or any modification which has hitherto appeared, to be true, the phenomena of animal heat are not explained by it. All the heat which respiration supplies is supposed to be evolved in the lungs. The heat of the blood in the lungs must be greater, than that of the same blood when it has arrived at the extremities, especially if the surrounding atmosphere has been cold, or considerable evaporation has taken place from the surface of the body. But this is not sanctioned by the observation which faithful experiment has enabled us to make.

The hypothesis then which has for its foundation the decomposition of the atmospheric air in the lungs must necessarily be altogether rejected. In the subversion of this hypothesis, we shall be found, I trust, to have made considerable progress towards the establishment of that which has been proposed. We have not only obtained the negative proof in favour of our hypothesis, that no other has been found to be true, but some part of it has even been established. It has been ascertained that nitrogen and carbonic acid gases can find access into the bronchi without entering by the windpipe; and that there is no other conceivable source from whence these gases could have sprung, excepting the blood in the pulmonary vessels. It may I think be safely inferred from the preceding examination, that the air inspired may find its way from the bronchi, without being transmitted back through the windpipe, or without being decomposed. But the proofs we have hitherto had an opportunity of adducing of this important part of our inquiry are not clear and decisive. We are next then to adduce those proofs, by which the existence of the supposed passages for the air from the bronchi into the pulmonary veins is believed to be established. We have first to observe that the existence of those passages is rendered probable by the analogy of structure. That openings exist between the venous capillaries belonging to the larger circulation, and that the principal part

of the office of absorption is performed by these capillary ramifications, is rendered probable by the explanation of the causes by which venous blood is moved, and has been established beyond all doubt by Majendie, the present eminent physiologist of France. There is every reason to suppose, that the veins of the lungs are constructed in the same way with the veins in other parts of the system, and that such ramifications are to be found between those veins and surfaces of the bronchi. But, in opposition to this supposition, it will no doubt be urged that if the lungs be removed from the body, and fully inflated by blowing through the windpipe, air ought to pass through the supposed channels into the pulmonary veins, but that it does not in these circumstances do so. In answer to this objection it may be observed that when the lungs are dilated in this manner, only one class of vessels belonging to the lungs is distended. No force is applied to dilate the blood vessels. On the contrary the pressure upon their external surface is by this operation increased. When the lungs are taken out of the body they are in a state of collapse. The vessels of every description contained by them are reduced to the smallest caliber; that their contents will permit them to take. The venous capillaries supposed to pass from the bronchi, being empty, will be completely closed. Pressure, in that case applied to their mouths, will not open them, but close them still more securely, by making the sides of those mouths act as valves; especially if, as most certainly will be the case, these vessels enter the bronchi with some degree of obliquity. Hence it happens that when part of the gut of an animal is inflated with air, it is found to be air-tight; although it is well known, that between the internal and external surfaces of the gut, there existed passages, through which during the life of the animal the nourishment was transmitted, in its course from the alimentary canal to the blood. Hence, it appears to me, that there was a great defect in an experiment lately made by Majendie to ascertain the vascular structure of the lungs. That physiologist inflated the lungs with air to their utmost extent, and when they had been kept in that state, till they had become dry, and had lost all elastic power, he sliced them in expectation of finding all the vessels, in the condition in which they exist during life. But one class of vessels, the air vessels, were alone dilated on this experiment. The course of these vessels so far as it extended, might have been seen to advantage, but by no means the further communications which they might have had with the veins. Had he dilated the lungs, not by blowing into the windpipe, but by removing a part of the atmospherical pressure from their external surface, he would have imitated

the process of nature in expanding those organs, and all the internal vessels, both sanguineous and aerial would have been proportionally dilated. The slicing them when dry might then have been expected to have exhibited a true picture of the pulmonary structure.

The existence of the communications contended for is supported, by the analogies supplied by comparative anatomy. The air vessels in many insects, as in the locust and silk-worm, are observed to communicate freely with the blood vessels, from which the return of air or any liquid is prevented by well adapted valves.

The opinion, that air passed directly into the pulmonary veins in breathing was maintained long ago, by many physicians. In the year 1739 Bertier of Bourdeaux published a work, on the passage of the atmospherical air into the pulmonary veins, which, on its appearance, was crowned by the faculty of medicine. I have not had an opportunity of examining the work itself, but, from the short abridgement of it, contained in Haller's faithful record of all preceding physiological research, it appears that substances capable of being inspired, and at the same time of indicating their presence by sensible qualities, when mixed with blood, were received into the lungs with the air; these substances were found upon examining the animal after death, to have passed into the blood. In this way, finely levigated powder of stone and of metal, several particles of lead, and numerous other substances were found to have obtained a passage from the lungs into the pulmonary veins, and the left chambers of the heart. Haller appears to have agreed on this subject with Bertier, and the same opinion has been advanced in our time by Mr. Abernethy of London.

The next question is, what becomes of the air which is admitted into the pulmonary veins during inspiration. Some eminent Chemists of the day, particularly Dr. Thompson of Glasgow, admit the absorption of atmospherical air by the lungs, but contend that it is decomposed, and that the nitrogenous part of the air is afterwards discharged. The only circumstance in support of this opinion is the existence of nitrogen gas in the air expired, separated as it is supposed from the oxygen; but all the arguments which have already been advanced against the decomposition of the atmospheric air in the lungs, bear with equal force against this supposition. It would appear further, that the gas which had entered the pulmonary veins could not be returned, in consequence of the valves with which there is every reason to suppose these vessels to be

furnished; and a strong argument in favour of the existence of such valves is, that air when blown into the pulmonary veins, is not readily made to pass into the bronchi. The air taken into the blood vessels in the way supposed must be received in infinitely divided portions, and must be intimately mingled with the blood. The particles of air may be said to be brought into contact with the particles of blood, particle, with particle. It may be absorbed by the blood, it may be chemically combined with some parts of it, a combination which would be greatly favoured by the manner in which the substances are brought together; or it may be mixed with it, still retaining its gaseous form. There is every reason to suppose that each of these processes takes place in part. By the operation of the two first, a portion of the air will be changed from the gaseous to the liquid form while it is still in the lungs, and heat will necessarily be evolved, but the temperature of the blood in the lungs is prevented from rising beyond a certain degree by a process which has already been alluded to, and which will be more particularly noticed in the sequel. The remaining portion of air drawn into the pulmonary veins, and existing still in the form of gas, is transmitted, with the blood in which it floats, through the heart into the arterial system. As it proceeds in the system, it is gradually changed by the two processes already noticed, from the aerial into the liquid form, and as this is effected, heat is necessarily disengaged. This change may not be supposed to be completed, before the blood has finished its journey in the arteries; and thus a fresh supply of heat is, with every pulsation of the heart, transmitted to the ends of the system, to supply the place of that, which in the interval has necessarily been abstracted.

When the blood has passed from the arteries into the veins of the general system, its color is converted from vermilion into purple. Various opinions have been advanced respecting the causes of this change. It is generally I think believed that the vermilion or bright red color is given to the blood by the addition of oxygen to it in the lungs, and that on the arrival of the blood at the ends of the arteries, the oxygen has been so far abstracted as to be deprived of the power of maintaining this color in the blood. This is supposed to be strongly supported by the fact, that the color of venous blood is rendered brighter by being exposed to a stream of oxygen gas. But the change of color is effected so suddenly, as to render this supposition I think inadmissible. Besides, it does not appear that the color of the blood in the pulmonary veins is brighter than that at the end of the arteries. The ingenious Dr.

Crawford already mentioned contended that the purple color was given to the blood by the decays of the system, which, at this part of the circulation, found admission into the blood vessels. It was objected to this supposition, that, at the passage of the blood from the arteries into the veins, such results of decay as are supposed could find no access to the blood; as, said his opponents, all such impurities must pass through the absorbent or lymphatic system, which only becomes connected with the blood vessels near the root of the veins. But this objection, it is now known, can have no force; since the absorbent faculty of the veins, rendered probable by the causes by which the blood is circulated in the veins, has been fully established by the experiments of Majendie. With this part of the doctrine of Crawford I am disposed to acquiesce. Loaded in the way supposed by Dr. Crawford with the products of decay, the blood returns to the lungs where these products are discharged from it into the bronchi, and thence out of the system through the windpipe, in the form of impure air. Thus purified, it is transmitted into the pulmonary veins, resumes its vermilion hue, and becomes again the vehicle of heat, and of nourishment to the system.

An important service seems to be performed, by the impurities to be discharged from the blood assuming in the pulmonary arteries the gaseous form, and more intimately connected with our present inquiry. By the conversion of a great portion of the inspired air into the liquid form in the lungs, it is easy to suppose that too great a quantity of heat might be at once disengaged. But the synchronous formation of gas in the pulmonary arteries, is calculated to employ the excess of heat which might thus be generated in the lungs. The lungs therefore act in a double capacity, as a furnace to supply heat when it is deficient, and as a refrigeratory to remove it when it is excessive. The heat generated by the conversion of atmospherical air into a liquid form is necessary for the separation of the impurities with which the venous blood is loaded, for it maintains the blood, notwithstanding the cooling process of the formation of gas from it, at that temperature at which the ebullition, though favoured by a diminished pressure, could alone take place. These processes have reciprocally a necessary action upon each other. It is only when the heat of the blood has reached above a certain degree, which may be called its maximum, that the cooling process commences; and when it is below this maximum, the heating process goes on unchecked, until that maximum is exceeded.

Such are the advantages which animal existence receives from the wonderful process of respiration.

The further prosecution of the inquiry in this direction would seem to lead to the explanation of the causes why the temperature of some animals is higher than that of others, and to the causes of the increase of heat in fever.

(*To be continued.*)

ART. VI.—*On the Cure of Subcutaneous Nævus by the Seton, with Observations on the probable Organization of that Morbid Growth.* By THOMAS FAWDINGTON, Surgeon to the Lying-in Hospital, Manchester, &c.

NÆVUS as it exists in the cutis, appears to be of two kinds, distinguishable chiefly by the preponderance of arterial or venous tissue; and reasoning from analogy alone, we should expect to find similar differences in the nævus which has its seat in the subcutaneous cellular texture. That this is the case I think no one will doubt, when he has minutely examined the various instances which may have fallen under his notice; and if he compare the cases that have been recorded, he will derive abundant evidence of a dissimilitude in both the physical and physiological characters of the morbid growths in question. In the arterial nævus, so eloquently described by the late Mr. John Bell under the term "*Aneurism from Anastomosis*," a strong feature of the disease is its violent pulsatory movements, especially when moderately pressed; and an enlarged and tortuous state of the neighbouring arteries, which run towards, and apparently supply, the tumour. These circumstances no less distinguish it from the other form of nævus than the color, when it is situated beneath transparent textures, as in the examples published by Mr. Dalrymple and Mr. Travers, in which the vascular mass, protruding from the orbit, shewed through the translucent conjunctiva the florid arterial hue. One of the most unequivocal cases noticed by Mr. J. Bell, presented the tumour, which had been growing for seven years, immediately over the eye-brow, and here the pulsation was not only vigorous and in concert with the supplying arteries, but the frontal and anterior branch of the temporal were "greatly enlarged," the latter remarkably so, which "went curling along the temple," and beat much more powerfully than in a natural state. It seems worthy of observation too, that in this case no dilated veins were to be seen in the vicinity of the tumour. It would be easy to multiply examples of a similar kind, but I need only refer to an article on this subject, in the 31st volume of the Edinburgh

Medical and Surgical Journal, by Mr. Syme; and to the case related by Mr. Brodie, in the 15th volume of the Medico-Chirurgical Transactions, in order to justify the position before advanced, that aneurism from anastomosis, or the arterial nævus, exhibits characters sufficiently striking, to warrant us in separating it from those venous tumours, of which the following cases are examples; and to constitute it a distinct species, if we retain the word nævus as the generic term.

The venous subcutaneous growth, so well delineated by Mr. Wardrop, is characterised by a doughy compressible tumour, loosely attached to the subjacent parts, generally connate, and, after it has become prominent, presenting a purplish hue, similar to what is observed in common varix. There is little sensibility, and no pulsation in the swelling, a slight thrill only being perceptible when it is compressed, owing, I apprehend, to the increased velocity with which the blood is forced through its various channels. Like the arterial nævus it becomes fuller and more prominent from the afflux of blood to the part, however occasioned; and the efforts of the child always produce a marked influence in this respect. The veins in the neighbourhood of the tumour are considerably dilated, but the arteries, in every case which I have had an opportunity of witnessing, are not distinctly enlarged, and pulsate with no inordinate force. The extirpation also of this species of nævus seems to throw some light upon its nature, for, in three instances in which I have removed the tumour by the knife (one the size of the section of a pullet's egg) no ligature was required. The hemorrhage evidently proceeded from the dilated veins which wandered tortuously beneath the cutis, to some distance from the disease, and was easily checked by temporary compression. But after the removal of a small arterial nævus, not larger than a hazel-nut, situated over the superciliary ridge, and extending into the orbit, it was necessary to tie two vessels which poured out blood per saltum; compression having been employed fruitlessly, for a period of ten minutes.

Now, reflecting on these phenomena, may we not consider it as probable, that the arterial nævus is formed by a dilatation* of the anastomosing ramifications of the arteries exclu-

* In employing the term dilatation, I wish to be understood as indicating a condition, resembling that which exists in the collateral vessels which carry on the circulation, after a portion of an arterial trunk has been obliterated, either by ligature or any other cause. I do not allude to mere distention of vessels previously existing in a demonstrable form, but to a positive growth in the vascular parietes, proportionate, in a degree, with the increase of caliber, like what takes place in vessels newly developed—not generated—destined to support an extended and permanent function. The same remark would appear applicable to varix, so com-

sively, constituting a plexus of complicated and increasing intricacy, which is supplied with blood from continuous arterial branches, while the capillary extremities retain their integrity, and communicate with the venous radicles, in their usual and natural manner. And that, on the other hand, the venous growth is constituted by a species of varix, generated on the minute anastomosing veins, and bears the same relation to the trunks and capillaries as that which has been described in reference to the arterial nævus.

I am aware it has been thought that the resemblance, except in a very remote degree, does not obtain: since in some of the cases alluded to, particularly Mr. Syme's, the larger branches and anastomoses of the arteries were alone implicated; but this fact seems to me not to apply to the others; and that, while we admit the susceptibility of the more demonstrable vascular canals to a continuous morbid dilatation, it requires no great stretch of analogy to suppose—it appears indeed to be a natural inference—that those on a smaller scale will be liable to the operation of similar influences. The physiological phenomena of these cases, so far as I am able to determine, are alike; the difference consisting rather in the form of the swelling and the comparative size of the dilated vessels. And this difference appears to be easily reconciled by a knowledge of the circumstance, that the collateral communications or anastomoses become more and more numerous as the arteries subdivide and diminish, in order to reach their ultimate destination: for, while the larger arteries only are affected, as in Mr. Syme's case, the lateral communicating branches, however enlarged, are not sufficient in number to form an elevated, equal and circumscribed tumour, and the swelling assumes, therefore, a flat unequal and diffused character; the dilated vessels of which it is composed being almost separately distinguishable by a careful manipulation of the part. But when this aneurismal dilatation falls upon the extreme divisions of the arterial system, where the anastomoses constitute a minute net-work, we can readily conceive how a tumour may be built up, at once prominent, circumscribed, and comparatively uniform over its whole surface.

mon in the lower extremities; for ramifications of veins which before were not visible, not only become so, but gradually increase in size, and draw after them other minuter veins, so as occasionally to present in some parts of the limb a tumour not very unlike the venous nævus in external characters. Indeed, if the power of resistance in a vessel thus situated did not keep pace with the dilatation to which it is subjected, the extended tunics must have given way to the pressure of the column of blood, before the vessel could have attained the volume, which we perceive veins in a distended state, so frequently to possess.



Mr. Fawdington's, Case of Nævus (Gaskell Fig. 1.)



M. Fairbairn's Case of Nervus (Gaskell. Fig 2.)

Observing again the Cutaneous Nævi, from which we take our parallel, it would not be difficult to make out a variety, participating equally in the characters exhibited by the two forms described. Thus, every one must have seen a nævus on the surface, of a perfectly arterial hue, maintaining this appearance for months, which, after assuming a disposition to grow, has become gradually transmuted into a tumour possessing neither the venous nor scarlet color exclusively; but of a mottled purplish appearance, from the confused mixture of the two, while in separate vessels. I am not prepared to say, from observation, that this variety ever takes root in the subcutaneous cellular tissue, though I think it extremely probable; and if so, it is to this variety, I apprehend, that the theory of the formation and structure of nævus, as maintained by Mr. J. Bell, more particularly applies; for here, we have reason to believe, that though the diseased action commences in the arterial ramifications, it soon, in the progress of growth, extends to their capillary terminations, and draws in the veins with which they are continuously connected, constituting a “congeries of small active arteries, absorbing veins, and intermediate cells.”

I am sensible, however, that in offering these conjectures, much remains to be done to determine confidently the anatomical and physiological nature of nævus; and that multiplied and varied injections of this morbid structure, before it is detached from its surrounding connections, will be required to ascertain so desirable an object. That it is composed of a convolution of vessels, intimately interwoven with each other, is evident from an ordinary section of the tumour; but how it is supplied, that is to say, from what channels it directly derives its blood, has not, to my mind, been at all clearly shewn by dissection. In the venous growth, it will be seen, that I suggest it as probable, that the blood is brought by the venous capillaries and carried off by the large veins, so conspicuously connected in every direction with it; and that the supply is derived from arterial channels in the “aneurism from anastomosis.”

These preliminary observations have been made chiefly with the view of indicating the kind of tumour to which the treatment by seton, which is the peculiar object of this communication, has been applied. It is the venous, upon which the experiment has been tried. I would not be understood to suppose that the seton commands the preference in every case, or is intended to supersede the other means recommended for its cure. It is only under particular conditions that I should even advocate its adoption; for it is, comparatively speaking, tedious, and on the whole, not less painful, perhaps, than the plans at present in use. Two principal circumstances weigh

with me in choosing the seton, viz. the magnitude and situation of the tumour. If the size of the nævus be such, as to preclude the employment of the knife, caustic, or ligature,* then I am of opinion that the seton may be adopted with greater certainty of success than the tying of the arterial trunk which supplies the part to which the tumour is attached; as in the two first examples related, which would admit only of one of these alternatives. Then, again, as to situation; if it should be an object to save deformity, which undoubtedly it is, the seton would appear to be admissible in those venous subcutaneous growths which affect the face or head, or such parts as are liable to be left uncovered by the dress, especially in females, unless such growths, from their small dimensions, allow of removal by the knife, so as to leave a mere linear cicatrix after healing. I apprehend that the seton is followed by considerably less disfigurement than the destruction of the part, either by caustic or the ligature, which must necessarily be restored by granulation; for, instead of having one large cicatrix, as in the latter case, the greater portion of the integument covering the tumour being preserved in the former, little more than the scars produced by the needle remain, and hence the deformity is really trifling. And looking at the case of Tetlow, there would not only have been great risk of fatal irritation from the use of the ligature, owing to the extent of surface, but a deformity, from destroying so considerable a portion of the hairy scalp, as well as an unseemly cicatrix on the forehead, for which no artificial contrivance could hereafter compensate.

In employing the seton, it is necessary to secure two material objects, the suppression of hemorrhage from the vessels divided by the needle, and subsequently, a degree of irritation sufficient to excite inflammation and suppuration throughout the diseased mass. The first may be accomplished by having the skein of thread large enough fully to occupy the apertures made by the needle; and the second, by using a needle that will admit, relatively to the dimensions of the tumour, a seton of considerable proportions. If however, the irritation fall short of the proposed object, easy means are afforded, by the newly established channel, of applying other irritants, or even caustic, to the residue of the morbid growth, without destroying the integument, which in Tetlow's case it will be seen was re-

* I have much pleasure in referring the reader to a very able article on this subject from the pen of Mr. Lawrence, contained in the 13th Vol. of the Medico-Chirurgical Transactions of London, as well as that of Mr. White which immediately succeeds it.

quired, and answered the best expectations. As the cases which follow, illustrate the plan in detail, I purposely omit any further observations or suggestions on the treatment of the venous subcutaneous nævus; I may beg to remark, however, that, knowing the serious mischief apt to ensue from injuries of veins, one might justly entertain the apprehension, that by so rudely treating a venous structure, as with the seton, disastrous consequences would occur; but, so far as they go, the following cases will negative this idea; since, neither the immediate nor remote effects of inflammation of the veins, as taking place in a previously natural state of these vessels, succeeded to the operation in any one of them.

CASE I.—James Gaskell, a fine robust child, was brought to my house in June 1825, three weeks after birth, in consequence of a small tumour situated deeply behind the angle of the jaw, which had been observed only a week before. It was now about the size of a walnut, soft and doughy in consistence, and of a slightly bluish color, but so faint as scarcely to be distinguishable from that of the surrounding surface. From these circumstances, there could be little doubt about its nature; but as the swelling was reported not to have increased since it was first noticed, and the tender age of the child rendering the event of any operation uncertain, I advised an astringent lotion and requested the mother to shew me the case, whenever she should perceive any decided enlargement of the diseased part. It was not, however until six weeks had elapsed, that I had an opportunity of again seeing the child, and the following was the condition of the tumour at this time. It had evidently taken deep root in the space between the angle of the jaw and the mastoid process, being in this part, more firmly adherent than is usual in subcutaneous nævus, and extended inferiorly to at least three quarters of an inch below the level of the base of the jaw; anteriorly, to a point midway between the angle and symphysis; and backwards, so that its most prominent part would project a little more than an inch beyond a perpendicular line drawn through the *meatus auditorius externus*. Above, the growth had proceeded over the side of the face, as far as the zygomatic arch, closely surrounding the ear, the lobe of which was elevated and displaced by it. The whole formed an oval tumour, which measured over the surface, in the direction of its long axis, five inches and a quarter, and transversely four inches. It was soft and compressible, the bulk of the swelling being easily reduced by a steady manipulation; but returning to its former state on the removal of the pressure. A slight thrill was perceptible throughout the tumour, but no pulsation, nor could an enlarged state of the adjacent arteries be distinguished. The general surface of the tumour presented a purplish aspect, large veins ran conspicuously over it; and in various points, especially just beneath the ear, the capillaries of the skin were undergoing that process of dilatation which constitutes the cutaneous nævus; several small granular elevations being already

formed.* The cries of the child had a visible effect upon the size of the tumour, and, as in all such cases, every thing which occasioned an influx of blood to the part. The general health was unimpaired, and the little patient appeared to experience no annoyance from the disease.

The history of *nævus* furnishing scarcely the shadow of a hope that it might undergo a spontaneous cure, and the rapid growth of the tumour, in the present instance, demanding that some means should be early adopted, either to arrest its progress or effect its removal, I proposed, with the concurrence of some of my surgical friends, to throw a ligature around the carotid after the example of Mr. Wardrop, not unaware of the difficulty that would attend the operation on so young a subject. This was accordingly done on the ninth of July, in the presence and with the assistance of my friends Messrs. Wilson, Boutflower, and Gardom, in the usual manner, the incision commencing at the base of the tumour. Though it is unnecessary to detail the steps of the operation, yet it may be right to observe that we were considerably embarrassed by numerous veins proceeding apparently from the *nævus* and intersecting the upper cervical space above the track of the artery. Some of these were unavoidably cut and required to be tied in consequence of the bleeding; the others were drawn aside out of the way of the knife, which could not be employed without the greatest caution, on account of the constant motion of the parts, occasioned by the cries and struggles of the child. The handle of the scalpel was now substituted for the blade, and the cellular tissue separated so as to expose the *omo-hyoideus* and sheath of the vessels, which being carefully opened on its tracheal side, the operation was completed without further difficulty. When the ligature was tied the tumour became in some degree collapsed and pale, the pulsation of the temporal artery ceased, and, after the wound was dressed, the little patient appeared tranquil and comfortable; yet much exhausted by its unceasing efforts during the operation, and the loss of blood from division of the veins situated in the course of the incision.

July 12th.—Little change in the tumour; it remains flaccid and pale but undiminished; the child has been feverish and fretful, but has taken the breast, and seems to day better. The wound, from which the dressings have become displaced, is adherent at its lower part, but the upper suppurating; and two of the ligatures, which were employed to restrain the hemorrhage, are separated.

July 17th.—The third ligature used to check the bleeding came away on the fourth day. This day the ligature separated from the artery. The wound is granulating and healthy; the child free from unpleasant symptoms, and recovering its healthy appearance. The tumour not at all contracted: it is, I fear, rather fuller and more tense; and its temperature raised as ascertainable by touch. A slight oscillation, I fancy, may be perceived in the temporal artery, but this is doubtful.

* See Plate 1st, which represents the tumour as it appeared previous to any operation.

24th.—The wound nearly closed, and health much improved: but the nævus retaining the condition of the last report. An undulatory motion, not amounting to pulsation, is evident in the temporal artery where it passes over the root of the zygoma; and this, taken in connection with the state of the tumour, leads me to apprehend that the collateral circulation is becoming so established, as to defeat the object of the operation.

August 20th.—The little patient quite well, with the exception of the tumour, which is stationary, though less than before the ligature of the vessel. It has resumed its character in respect to color. The same oscillatory action in the temporal continues certainly not more distinct than at the period of the last report. The whole of the circumstances, indeed, seem to be conclusive against the success of the operation, the free anastomosis amongst the vessels of the head apparently affording a channel of supply to the tumour which prevents the obliteration of its vascular structure, and consequent cure.

I now determined upon a trial of the plan recommended by Mr. Abernethy, the combination of pressure with cold applications, presuming that it might be more efficient in the present condition of the disease, than after it had regained its pristine activity of growth and support. This was adopted, so far as the situation of the tumour would admit of pressure, which, of course, was imperfectly maintained, and the plan continued for about a fortnight, when it was relinquished in consequence of having excoriated the surface, and seemingly excited the growth of the disease.

September 10th.—Disappointed in the results of the plans already tried, and unwilling to leave the disease to take its own course, it occurred to me that a seton introduced into the tumour might occasion a degree of inflammation throughout its substance, sufficient to destroy its peculiar structure. I accordingly, this day, passed a skein of common sewing thread through the long diameter of the tumour by means of a sadler's needle, observing the precaution, that the skein should be of sufficient bulk to close and compress the apertures so as to prevent hemorrhage. No dressings were applied; but the mother was directed to bring the child, as soon as the orifices should discharge or tumefaction take place.

13th.—The tumour tense and inflamed, especially at the superior part; but no discharge from the track of the thread. The child fretful but not distinctly feverish, and apparently suffering little pain in the swelling. The mother is disposed to attribute its fretfulness to disorder of the bowels which came on two days ago.

16th.—Copious discharge of a healthy looking pus; general tumefaction diminished; but abscess forming in the upper part of the swelling, which will probably open externally. The diarrhæa has ceased. The child takes the breast freely, and, excepting a slight febrile irritation, there are no symptoms to contend with. A poultice ordered to be applied.

20th.—The swelling considerably diminished, especially at its upper part, resembling rather the site of an abscess than of an organized growth.* The abscess referred to in the last report has given

way, and a slough, like that which exists in common boils, protrudes at the aperture. The discharge from the seton has been copious, and, from the irregular excavated feel of the parts beneath the surface, it is presumable that other small abscesses have opened into its track. The lower third of the tumour is somewhat inflamed and tumid, but retains its other characters as *nævus*. It is, therefore, evident that here, the presence of the seton has not been followed by the same degree of irritation as above, owing principally to the relative position of this part with the rest, not allowing it to be so completely transfixed in the first operation, as might have been wished. The child sustains the process with little constitutional disturbance; its fever has subsided, it takes the breast as usual, and, though looking pale, is in the main tolerably well. The seton ordered to be withdrawn and poultice continued.

26th.—Two or three small sloughs have escaped from the apertures made by the needle, and these are now closing, as well as that occasioned by the abscess. No traces of the morbid structure are visible in the upper two thirds of its original situation, except that the circumjacent veins are larger and more conspicuous than natural. The lower division of the tumour, however, has manifestly undergone no change; the inflammation which invaded it having disappeared, it now wears its original aspect, shewing, that unless some other step be taken, we can expect no further advance towards the cure. The health of the child is little impaired. Ordered that a seton be passed transversely through the residue of the tumour and treated as on the former occasion.

October 10th.—The operation has produced similar effects to those above described, viz. inflammation, suppuration, and destruction of a great part of what remained of the tumour. A part however, of about the size of an almond, has escaped the irritation, and still presents its former appearance. This is situated below the ear, and so near the line of the seton that it will not be difficult to reach it through that channel with the caustic. The child is pale, somewhat wasted, and the pulse accelerated, though the mother says that it feeds well, sleeps, and has not suffered, according to her judgment, any severe constitutional effects. The seton to-day withdrawn, and the nitrate of silver applied, through a canula inserted into the track, to the remaining portion of *nævus*. A poultice afterwards. The child recommended to take a little beef-tea, in addition to the breast, and small doses of sulphate of quinine.

28th.—The little patient was not brought again until to-day, and the following is his condition. The apertures are nearly healed, and there is a transverse depression marking the course of the seton. Immediately above and below this, the integuments are indurated and thickened, but not a vestige of the *nævus* remains, except at the point alluded to in the report of the 10th, where it presents nearly the same appearances. The integuments between the zygomatic arch and base of the lower jaw have not yet resumed their natural hue, being somewhat purple, and firmly agglutinated to the subjacent parts. Yet the vessels surrounding the site of the

disease have decreased both in size and number so as to leave nothing to be feared as to the regeneration of the tumour. The general complexion of the child is not much improved; it is pallid and waxen, but he has gained considerably in flesh and is regarded by his parents to be in good health.

February 2nd. 1826.—The event of this case is very satisfactory. There remains not a trace of the morbid growth. The remnant of it which was described as existing behind the angle of the jaw has quite vanished, and the integuments have become comparatively loose and of natural aspect. The cicatrices are insignificant, scarcely disagreeable to the eye; so that, if they had not been accompanied by some degree of puckering and depression, they would probably have escaped general observation.* On taking a front view of the face a slight irregularity is observable in the contour of this side; it appears, also, rather fuller than the opposite, but not so much so as to produce any marked deformity.

The ligature of the carotid in the foregoing case arrested the increase of the swelling, but appears altogether to have failed in its cure. This circumstance would excite no surprise, when we regard the numerous vascular inosculations existing in the situation of the tumour, if there were not cases on record of indisputable success from the operation in question. Besides those related in the *Medico-Chirurgical Transactions* by Mr. Dalrymple and Mr. Travers, which, by the way, appear to have been instances of arterial nævus, and one subsequently by Mr. Wardrop, clearly the venous nævus, in which the utility of the operation was more questionable, the latter gentleman has recently had the most complete success from tying the carotid in a case, so far as I can perceive, very similar to the one which is the subject of these remarks. The cause of failure, then, in the present example, I shall leave it to the profession to solve; and, while I am inclined to entertain a preference for the seton in similar cases, as regards situation and extent, I take leave to say that, it is only in consequence of the experience developed in this paper, on the one hand, favourable to the latter measure, and, on the other, discouraging in respect to the former.† Both measures, I am aware, required further trial; and it was the disappointment

* See Plate 2nd, which is intended to illustrate the appearance of the surface at this period.

† The uncertain result of this operation is well exemplified in the communication of Dr. Mussey, which may be read in the Number of the *London Medical Gazette* for April 17th, 1830. In this case, the tumour was situated on the vertex, and *both* carotids were tied within twelve days, with little permanent advantage, the disease afterwards requiring to be extirpated. This was done six weeks after tying the second artery, at the expense of a considerable share of hemorrhage; from the consequences of which, however, the patient eventually recovered.

in the result of tying the artery, and an unexpected degree of success from the process by the seton in this case, which induced me, with Dr. Hull's concurrence, to adopt the latter in the following instance; a choice between the two, in consequence of the size and situation of the tumour, being the only advantage left to me.

CASE II.—Elizabeth Tetlow a vigorous looking child, ten months old, has had a small stationary subcutaneous nævus on the forehead since birth. About two months ago it took on the disposition to grow; and at this time (Feb. 12th. 1827) occupies the left half of the front encroaching on the eye-lid, and extends over the anterior half of the corresponding parietal bone. It presents the purely venous character; there is neither excitement nor enlargement of the neighbouring arteries, nor pulsation in the tumour. Large veins are to be seen running towards and over its surface, it admits of being reduced by compression and evidently swells under any exertion of the child, and presents the usual leaden color. The cutis in no degree participates in the disease, and though the upper lid is so far involved in the growth that it cannot voluntarily be raised, yet so nicely is the swelling defined, and so strictly limited to the *subcutaneous* cellular tissue, that on elevating the lid in a way to expose the conjunctiva, which is pushed towards the globe, no vestige of the peculiar structure becomes apparent.

The seton was passed through the long diameter of the tumour, with the usual precautions, and retained for nearly three weeks, as the effects were less severe than might have been wished; it being only in the immediate neighbourhood of the seton that the diseased mass became destroyed. Immediately after withdrawing the seton, therefore, a strong solution of sulphate of copper was injected into the channel left by it; and this was followed by a degree of inflammation through the whole tumour, which I was disposed to hope would entirely obliterate its structure. In this, however, I was disappointed; for after a copious discharge, which came on about the third day and continued more or less for a fortnight, the inflammatory intumescence subsided, and left the lateral portions of the nævus seemingly in their original state. I was hence reduced to the necessity of passing a thick skein of thread in a transverse direction, which at the usual time produced a desirable share of irritation and subsequent discharge from the orifices. But after a fortnight, when the seton was removed, it was found that the lower and inner division of the tumour had not been completely destroyed. It appeared advisable consequently to employ a more direct method of accomplishing the destruction of the remaining portion; and, for this purpose, I again availed myself of the channel caused by the seton. Instead of using, however, the sulphate of copper, as on the former occasion, I passed a cylinder of nitrate of silver, and pushed it forwards into the remainder of the diseased growth, where it was suffered to continue about a quarter of a minute. In a couple of days a considerable degree of inflammation was lighted up, not only in the part to

which the caustic was applied, but also in the whole site of the original tumour, which occasioned the fear that extensive suppuration or even sloughing would occur, but by soothing applications this effect was happily averted. The parts remained for some time greatly indurated, and the induration appeared to be accompanied by a chronic form of inflammation; which conditions were relieved by occasional leeching and evaporating washes. During the latter period of the treatment, the constitution was slightly disturbed, certainly not in a severe degree, and up to the time of applying the nitrate of silver the child had suffered surprisingly little. At the expiration of three months, every trace of the disease had disappeared and the parts had almost regained their healthy aspect, with the exception of the palpebral conjunctiva which, from having been involved in the spread of inflammation occasioned by the caustic, had become granular and thickened so as to require excision. The surface, indeed, where the tumour had been situated, appeared fuller than on the opposite side; the veins in the vicinity remained more dilated than natural, and the eyelid did not admit of being completely raised. The only cicatrices were those left by the apertures of the seton, which were, by no means, conspicuous: and, upon the whole, the disfiguration was unimportant.

At the present period, May 7th, 1830, the fulness is not strikingly perceptible; but the eyelid has not entirely regained its natural appearance, being still a little thickened and incapable of being fully elevated; yet sufficiently so for the ordinary purposes of vision. The cicatrices are still more contracted and less visible, the upper and outer being concealed by the hair, whilst those exposed to observation are not more offensive to the eye, than the scar left by the variolous pustule.

Though the seton in this case was not alone competent to cure the nævus, yet, it must be confessed, that it contributed in a principal degree to that end, and afforded the opportunity, additionally, of modifying the application of caustic in such a manner as to preserve the integument. It is obvious from the situation and dimensions of the tumour that neither ligature, excision, nor the caustic, in the usual way of employing it, could have been judiciously adopted; for independently of the risk of hemorrhage, or the deformity which would have been thus occasioned, the particular functions of the parts implicated, especially the eye-lid, would have been essentially impaired. Though the progress of the cure was tedious, and the little patient at one time apparently in hazard from excessive inflammation of the part, the result, upon the whole, was gratifying; and the case instructive, as it teaches the fact, that, caustic applied internally to the morbid growth, does not necessarily involve the destruction of its integuments; at the same time, that we should be moderate in its use when thus employed: for, it is to be remembered, that this agent is not

intended to act so much in directly disorganizing the diseased texture, as in setting up a destructive inflammation, by which, its obliteration appears to be effected. Upon this principle, indeed, the method of treatment by seton is recommended.

To the industry of my pupil Mr. Mellor, I owe the continuation of the notes of the annexed case.

CASE III.—April 7th, 1828.—George Crowther, ten months old, a fine healthy child. A nævus about the size of the section of a pullett's egg, implicating the cutis in its centre, but imbedded chiefly in the subcutaneous tissue, is projecting from the forehead immediately above the left eyebrow. This was discovered in the form of a small red cutaneous point, when the child was three weeks old, and has been progressively increasing, not on the skin, but in the cellular texture.

A seton to be passed through the long diameter of the tumour.

9th.—The tumour slightly swollen in the track of the seton, but no discharge from the orifices. The child apparently suffering no pain.

11th.—Tumour rather more swollen; some little discharge from the orifices. The child seems fretful and uneasy.

16th.—Orifices discharge freely; swelling somewhat diminished; and vascular appearances exchanged for that of a simply inflamed surface only somewhat darker in hue. General health good.

May 1st.—Seton removed ten days ago. All inflammatory swelling subsided; orifices healed, and tumour about half the size it possessed when first shewn to us.

7th.—A seton introduced transversely through the remnant of the nævus.

12th.—The tumour greatly inflamed and swelled; the apertures beginning to discharge; the special characters of the nævus are quite lost in the inflammatory intumescence.

19th.—The inflammation and tumidity declining, but no part of the nævus discernible, its whole structure apparently having been obliterated by the process. Copious purulent discharge from the seton, which was this day ordered to be removed. The general system unaffected.

June 2nd.—The discharge continued for several days and then the orifices closed. The inflammation and swelling have in a great measure gone down: but the part has a hardened feel, and the skin is firmly agglutinated to the textures beneath. I fear, however, that the color of the surface indicates the presence of a portion of the vascular growth, although it is so small as to render it difficult to decide upon.

December, 1829.—The fear expressed in the last report is fully justified. At the present period, there is existing between two of the cicatrices, a portion of the nævus not exceeding a horse-bean in size, and admitting readily of removal by excision. Indeed so much has the integument contracted, that the scars occasioned by the seton have approximated towards each other so nearly, that if it were thought necessary to extirpate the remaining diseased part,

it would be easy to include them in an elliptical incision, which would not require to be extended beyond a point that would allow of a perfect apposition of the edges, and a consequent seam of little significance.

We are, therefore, entitled to conclude, that though the seton has not completely succeeded in this instance, in obliterating the morbid structure, it has arrested its growth, and reduced it within a compass, which allows of the interposition of another remedial agent that might be applied safely, and ensure the least imaginable deformity. I am quite aware that either excision or the ligature was applicable in the first instance; the latter especially, might have been adopted with certainty, and even the former would not have been attended with hazard, if a competent assistant had been employed to compress steadily the circumference of the incision, while the operation was in progress. But with the view of creating as little disfigurement as possible, I was led, from the evidence of the preceding cases, to select the seton; and the event, though not such as to entitle it to be called "a perfect cure," appears to warrant the procedure, and to be not altogether unworthy of the notice of the practical surgeon.

ART. VII.—*An Inquiry respecting the period of Puberty in Women.* By JOHN ROBERTON, Esq. Surgeon to the Lying-in Hospital, Manchester.

WOMAN, besides her mind and figure, has certain sexual peculiarities which distinguish her from the females of brute animals. Such are the catamenia, exemption from periodical ardour; exemption, in general, from pregnancy during the ordinary period of suckling; and lastly the limited duration of the generative faculty, which exists through somewhat less than half the natural term of life. Of these peculiarities the latter is perhaps the most remarkable, as it seems plainly to indicate that woman is predestined to other offices than those which belong to the mere animal; that it is not intended her day should close when the duty of reproduction has been fulfilled; but that then, ripe in knowledge and experience, it remains for her to instruct the beings to whom she has given birth, in the duties and accomplishments that concern their destiny, and through many years to shed on domestic society the pure and steady light of a moral nature, which, though still in the body, has been divested of sensuality.

Respecting the age of puberty, as indicated by the eruption of the catamenia, or the age at which the aptitude for genera-

tion commences (for the two forms of expression are held to have the same meaning) there is little or no difference of opinion among physiologists: they concur in teaching that the period is not uniform, but that it is influenced by many circumstances, as climate, constitution, and mode of life; that in warm climates it appears often as early as the eighth or ninth year; in temperate climates is usually postponed to the thirteenth or fourteenth; and in the arctic regions to the nineteenth or twentieth.*

These opinions concerning puberty (I shall presently shew they are universally entertained) appear to me to be in a great measure erroneous. As the subject involves questions of some practical consequence, I offer no apology for entering upon its investigation. Indeed, so precarious and unsettled is that department of physiology denominated *experimental*, that any attempt to place the little of that science which depends upon *observation* merely, on a better foundation, deserves, even if it prove a failure, to be received with some indulgence.

In exhibiting the sentiments of different authors who have written on female puberty, I begin with those of Haller, both because they have been generally adopted and prevail at the present time, and also because the notions of the most eminent of his predecessors on this topic are so blended with fable, as to merit little notice.† Haller's opinion is, that in the warm regions of Asia, the menses appear from the eighth to the tenth year; in Switzerland, Britain, and other equally temperate regions, at the age of twelve or thirteen; and later the further we ascend towards the north.‡ The same view is taken by Denman, which he expresses as follows: "The early or late appearance of the menses may depend upon the climate, the constitution, the delicacy or hardness of living, and upon the manners of those with whom young persons converse. There seems to be some analogy between the effects of heat upon fruits, and the female constitution with respect to menstruation, for, in general, the warmer the climate the sooner the menses appear. In Greece and other hot countries, girls begin to menstruate at eight, nine, and ten years of age; but, advancing to the northern climates, there is a gradual protraction of the time, till we come to Lapland, where women do not menstru-

* Good's Study of Medicine, vol. iv. p. 43.

† Even the illustrious Boerhaave assures us that "there are whole nations whose women are destitute of the catamenia; as in the natives of Scythia, Brazil, Greenland, &c." and further, that the Scythian women approach nearly to the nature of the male!—Academical Lectures, vol. v. p. 117.

‡ Elementa Physiologiæ.—Tom. vij. Pars. ij. p. 140.

ate till they become of maturer age, and then in small quantities, at long intervals, and sometimes only in the summer.”* According to professor Burns, “The age at which menstruation begins varies in individuals, and also in different climates. It is a general law that the warmer the climate, the earlier does the discharge take place, and the sooner cease. In Asia, for instance, the menses begin about nine years of age; while in the north a woman does not arrive at puberty till she is eighteen or twenty years of age. Nay, if we may credit authors, in very cold countries women only menstruate in the summer seasons. In the temperate parts of Europe the most common age at which the menses appear is thirteen or fourteen years.” Again, “In this country menstruation ceases about the forty-fourth year, lasting for a period of about thirty years. In the East the menses begin soon, flow copiously, and end early. The women in Asia, for example, being old, while the Europeans are still in their prime. In the north, the menses begin late, flow sparingly, and continue long.”† According to Herbert Mayo, “Women reach the period of puberty one or two years before men; the inhabitants of southern before those of northern climates. In the hottest regions of Africa, Asia, and America girls arrive at puberty at ten, or even at nine years of age. In France not till thirteen, fourteen, or fifteen; whilst in Sweden, Russia, and Denmark, this period is not attained till from two to three years later.‡ “Puberty” says Dr. Dewees, the American writer, “must vary, as it may be influenced by climate, constitution, and modes of life, always being earlier in hot than in cold climates, &c.”§ Again, “The average period of the first appearance of the menses may be between the fourteenth and fifteenth year in this country (North America.)”||

These extracts exhibit the opinions of our standard writers, at least of those whose works are most frequently appealed to as authorities. It would be easy to multiply quotations to the same purport, but as I know of no author whose opinions differ in any material degree from those of Haller, I consider further testimony to be unnecessary.

For the sake of perspicuity and order I divide the essay into three parts. The first treats of female pubescence in our own country: the second, of the same subject with reference to

* Denman's Midwifery, sixth edition, p. 83. 1824.

† The Principles of Midwifery, by John Burns, M. D., seventh edit. p. 138. 1828.

‡ Outlines of Human Physiology, by H. Mayo, second edition, p. 463. 1829.

§ A System of Midwifery, by W. P. Dewees, M. D., p. 45. 1825.

|| Dewees, p. 131.

cold climates : and the third, of the same as it occurs in warm regions.

Part 1.—Many years ago, I was consulted in the case of two sisters, the one seventeen, and the other eighteen years of age, who, though apparently in health, were supposed to be suffering from retention of the menses, for which they had been taking some popular herb medicines. They were tall, more than commonly muscular, of a blooming healthy hue, and without any sign of enlargement of the mammæ. In other respects their appearance was perfectly feminine. Finding that they had no symptom of disease, I recommended that they should desist from medicine, on the ground, that, to all appearance, they had not yet arrived at puberty, although in age they had certainly passed what is considered to be its usual period. Instances of an opposite description afterwards came under my notice. In one, where a girl menstruated at twelve, her mother and grandmother had, I found, become regular at the same age. In another, five sisters in one family menstruated at the age of eleven. These, and other cases in no respect morbid or irregular, but perfectly in the order of nature, led me to doubt whether the period of puberty were nearly so uniform as we are taught in books to consider it. This doubt, which may often have occurred to others, induced me to institute an investigation of the subject at the board of the Lying-in Hospital of this town. The result appears in the table which follows. The question as to the age at which they began to menstruate, was put indiscriminately to a certain number of the pregnant married women, on their coming to the Hospital to deliver in their letters of recommendation as home-patients. These women are generally in health, as appears by their walking, in an advanced stage of gestation, from considerable distances to the Hospital, the remote situation of which, is in the highest degree inconvenient to such patients, they being chiefly inhabitants of our widely extended and scattered suburbs. The circumstance of pregnancy is a guarantee, as regards the whole of the cases examined, of exemption from serious disease of the generative system. Owing to the great number of females who resort thither weekly affording an abundant source for inquiry, no hesitation was felt at rejecting every answer which evinced either a doubtful recollection of the fact, or that the information was reluctantly afforded.* I may therefore affirm, that this table furnishes as

* Perhaps it ought to be mentioned that the question relating to the period of puberty was put to each of the women along with other questions usual on the occasion, as, concerning the age, the occupation, the number of children, &c.; so that it did not appear as if put out of curiosity, or for a private end, but as one of the queries necessary to be answered, in order to her admission as a patient.

accurate data as the nature of such an inquiry allows. And let it be remembered, that concerning the catamenial sign of puberty the word of the woman herself is, on any extended scale of investigation, the only testimony to be obtained.

The following are the ages at which three hundred and twenty-six women began to have the catamenia.

TABLE.

In their eleventh year	6	In their sixteenth year	54
.. .. twelfth ..	12	.. .. seventeenth ..	50
.. .. thirteenth ..	31	.. .. eighteenth ..	19
.. .. fourteenth ..	60	.. .. nineteenth ..	18
.. .. fifteenth ..	72	.. .. twentieth ..	4

One very obvious corollary I would draw from this table, namely, that the natural period of puberty in women occurs in a much more extended range of ages, and is more equally distributed throughout that range, than authors have alleged. And another, which claims particular attention is, that did religion and our social institutions permit and encourage, in England, that early and unrestrained intercourse between the sexes, which, with the sanction of both, obtains in eastern and in almost all intertropical countries, it is to be supposed that we should witness instances amongst us of women becoming mothers at as early ages as eleven, twelve, and thirteen years. Other inferences that might be deduced from the table, I leave to the reader's ingenuity, as they would be foreign to the scope of my inquiry.

Part 2.—We have seen the geographical scale devised by Haller, and adopted by succeeding writers, for ascertaining the varying period of puberty as it occurs in the torrid, the temperate, and the frigid zones. We have also had evidence how indifferently the scale answers when applied in our country, which may stand for the temperate zone. We have now to examine if it apply truly in reference to the two which remain; and first, in respect to the women of the arctic regions.

It is a common, and, reasoning from analogy, a plausible opinion that animals and vegetables are in a considerable degree, similarly influenced by climate; that in cold regions, where even the pine, that citizen of the world, dwindles to a feathery shrub, man and the other animated beings will be meagre and stunted; that where the hardiest of our fruits and esculents ripen slowly, or never ripen, the maturation of animals will be tardy; and that if we advance higher still, to the *ultima thule* of modern geography, Melville Island, and to the shores of East Greenland, where the hardiest plants with difficulty find soil and nourish-

ment, there man will exhibit the last degree of imperfect development, his body scarcely ripening in time to procreate his species before its feeble sensibility ceases in death, if death it may be called, which terminates a frigid existence unworthy the name of vital. From analogy we thus reason, a way of arriving at truth which is a general favourite, and well may be, since, besides carrying with it a fair shew of philosophy, it requires little appeal to facts. We shall find that though cold affects, in a manner nearly similar, certain animals and vegetables, yet the same kind of influence by no means extends to man and certain other animals and vegetables. A partial view of the phenomena has alone given rise to so much false reasoning on this subject. It is true that within the arctic circle the horse and the cow are mimicked in pigmy forms,* and the same may be said of our esculents, and of our forest trees, the oak, the ash, the elm, and even the pine and the birch. The climate at the very margin of the zone causes them to become stunted, and further northward, wars successfully against their very existence. But we shall err if we suppose that even here nature is without evidence of her exhaustless bounty. Many flowers of brilliant hues and stately forms are to be seen, which languish under a milder sky. It is here the *Epilobium Angustifolium* spreads its magnificent purple blossoms, and the *Pedicularis Sceptum Carolinum* still more loftily displays, tier above tier, its bright and golden flowers.† And of fruits, among many that might be enumerated, the cloud berry, *Rubus Chæmamorus* affords the Laplander as plentiful and delicious a dessert, as could be furnished by any of those indigenous to our climate.‡

In regard to other productions, barley, rye, the rein-deer-moss, and the tall Arctic grasses thrive luxuriantly. Instead of the horse and the cow the Laplander has the rein-deer, more than a substitute for both; and in the place of our poultry and game, the splendid cock of the woods, the beautiful ptarmigan, the white partridge, and innumerable flocks of waterfowl. In tracts still more inhospitable than Lapland, the northern regions of Greenland and America, where the larger vegetables wholly disappear, enough of shrubs and grasses remain to attract several of the graminivorous quadrupeds, and

* The Lapland cows "are white, and very little bigger than sucking calves in England."—Clarke's Travels in Scandinavia, vol. i. p. 309.

† Those who have adopted the idea that a country must be barren and destitute of natural beauty because it is far north, ought, among many works worth perusing, to read the Flora Lapponica, Linnæus's Tour in Lapland, and, more delightful than any other, Clarke's Travels in Scandinavia.

‡ *Rubus Chæmamorus*. In Lapponicæ sylvis in immensa copia prostat.—Linnæus.

so far are these and the carnivorous animals from appearing stunted and feeble that the rein-deer, the moose, and the musk ox, the white bear, the wolf, and the dog, in size, strength, and spirit, surpass their kindred of Europe. And where the shores are heaped with icebergs, forming, as might seem, the last refuge of sterility, amphibiae people every slope and furnish sustenance for man and the other carnivora. Hence it is evident that geniality, as applied to clime, has only a relative meaning, and that plenty of food is all which is absolutely necessary, even in the polar islands, to the perfection of, at least, the fiercest and largest quadrupeds.

That this law applies equally to men is disputed. The most northerly Finlanders, Swedes and Norwegians, and the Indians of Canada are confessedly of large stature: it is not with these therefore we have to do. It is the Laplanders, the Esquimaux and the tribes of Northern Asia that are generally supposed to illustrate the effects of cold on the sensibility and expansion of the human frame. Admitting the comparatively diminutive forms of these races, it may first of all be observed, that, some of them, the Esquimaux on the Labrador coast for example, belong to a more temperate and southerly climate than many of the taller Indians; and the same remark applies to the inhabitants of the higher parts of West Bothnia, where the gigantic Swede and the pigmy Laplander are found in the same latitude. If therefore cold affect the stature it must operate in two ways, namely, in producing both giants and dwarfs. In the second place, it is not true that the Esquimaux are the puny race they have often been represented. On the contrary their average height is greater than that of most of the intertropical nations. Those with whom Capt. Parry associated at Igloolik and Winter Island, who roam as high as the 72nd degree north, measured, for the men, five feet five inches and a half; and for the women, five feet and half an inch. One man stood five feet ten inches high, and several of them were elegantly proportioned.* With this admeasurement may be contrasted that of the millions who people the Indian Archipelago. According to Crawford the average male stature for the brown races is five feet two inches, and the height of the women four feet eleven; while, of the Papuas few are found to exceed five feet.† And were the comparison extended to the peasantry of Egypt and Arabia, and even to those of many parts of France, their

* Parry's Second Voyage, 4to. p. 492.

† Crawford's Indian Archipelago, vol. i. p. 19—24.

average stature would still be exceeded by that of the natives of Igloodik.* It is obvious therefore, that the fact of the diminutive forms of some of the northern tribes is not to be attributed to the influence of cold.†

We have now to enquire what truth there is in the analogy said to exist between the effect of heat upon fruits, and the female constitution with respect to menstruation or pubescence; the fruit and the female ripening, as is alleged, the more rapidly the warmer the climate and *vice versa*.‡ Here I must repeat that the parallel between fruits and women does not hold good. The latter come to maturity in every climate, but this is not the case with any one kind of fruit. To preserve a correct analogy we must take the native females and fruits of the same climate. In regard to the arctic regions, I do not find that the indigenous vegetable productions of Lapland are longer in ripening than those of southern climes. At the confluence of the Muonis and the Tornea barley is sown, reaped, and harvested in seven weeks;§ indeed the rapid evolution and maturation of arctic fruits and flowers is proverbial. It may almost be compared to that primeval burst of vegetable being which followed the creative word, springing from the naked earth, and clothing it at once in the hues and luxuriance of summer. Nor can I discover that arctic quadrupeds commence the work of procreation at a later period of life than happens

* The Egyptian peasantry attain the height of about five feet four inches.—Volney, vol. i. p. 75. While the Bedouins seldom exceed five feet two inches,—ib., p. 393. In France in 1826 according to M. Dupin, out of 1,033,422 youths who appeared before the Councils of Revision, 380,213 were unfit to be enrolled as they did not even reach the stature of five feet one inch and four-fifths English.

† Without taking upon me to account for diversity of stature in different races, which would be about as difficult a task as to explain why the noses of one race are flat and those of another race aquiline, I may with propriety in this place give the opinion of Bishop Heber in regard to the diminutive size of many of the Hindoo women, because the peculiarity remarked by him does not belong to the race, but only to certain classes. “I was to-day talking with Dr. Smith” says the Bishop, “on the remarkably diminutive stature of the women all over India, a circumstance extending, with very few exceptions, to the female children of Europeans by native mothers; and observed that one could hardly suppose such little creatures to be the mothers or daughters of so tall men as many of the Sepoys are.” The Doctor in reply remarked, “that the women to be seen in the streets and fields, and such as Europeans in ordinary circumstances have access to, are of the lowest caste, whose growth from an early age is stunted by poverty and hard labour, and whose husbands and brothers are also of mean stature. That this is not the case with the women of the better classes (to which the Sepoys belong) they being equal in stature to the common run of European females.”—Heber’s Journal, vol. ii. p. 509.

‡ Denman.

§ Clarke. *Hordium polysthicum*, Mai 31, seribatur, maturitatem adsequebatur Jul. 28. *Secale vernum vel minus*. Mai 31. seribatur, maturum dissecabatur Augusti 5. Flora Lappon.

in our own country. If Hearne may be credited, the Polar white bear brings forth very early “for” says he “I have killed young females not larger than a London calf with milk in their teats.”* Equally unfounded is the notion that cold lessens the procreative appetite. It probably originated from its being observed that animals pair in spring or in the beginning of summer, and not in the winter, a circumstance not to be imputed to the influence of heat as it commonly is, but rather to the instinctive choice of a period for propagation, which shall issue in the young appearing at the season when either their food is abundant, or will be, at the time of weaning. A fact recorded of the Esquimaux dogs illustrates this point. Having shelter and food for their young provided for them, these dogs breed indifferently at all seasons. “In the month of December,” says Captain Lyon, “with the thermometer 40°. below Zero, the females were in several instances in heat.”†

The next step in our inquiry relates to the period of pubescence in Arctic women, and first as it is found among the northern Canadian Indians. This race, for there is reason to consider the various tribes as of one origin, is composed of the great families of the Knistenaux on the east, and for the more westerly regions, of numerous tribes, each known by its own barbarous but significant appellation, included in the Chepewyan family.

These traverse the vast and generally inhospitable regions which extend from about the 55th degree of north latitude to the borders of the polar sea in the 70th degree, and in breadth from Labrador on the east, to the Pacific and Behring’s Straits on the west. Though differing slightly among themselves in a few traits of physical character, they are upon the whole remarkably alike, being of moderate stature, of a bright copper color, with black lank hair, dark eyes, and a fine agile form. The women are not quite so tall as those of Europe.‡ As these Indians are hunters and fishers their food is almost exclusively animal. In affairs of love they manifest no want of ardour (though the contrary has been often asserted) as any one will be convinced who studies their manners in the writings of Charlevoix, Carver, and Hearne.§ Of the period for the

* Sam. Hearne’s Journey, &c. to the Northern Ocean, p. 368. 4to.

† Lyon’s Private Journal, p. 334.

‡ See the Travels of Carver, Mc. Kenzie, and Hearne, and the more recent publications in illustration of Capt. Franklin’s expeditions.

§ To those who are admirers of the simple manners of people in what is called “a state of nature” I would recommend Carver’s description of the Indian “Rice Feast.”—Travels in North America, p. 246. And Charlevoix Hist. de Nouvelle France, tom. iii. p. 288.

commencement of menstruation in their women, little is to be learnt from books of travels; nor ought we to expect much, since, besides other impediments in the way of such an inquiry, the Indians, like other barbarous nations, keep no reckoning of their ages. In general, therefore, when a writer presumes to fix the precise period of female puberty in the case of any uncivilized race, it is to be regarded as at best but a probable conjecture. This remark does not apply, of course, to authors who have resided long among those of whom they write. No writer had better opportunities of studying the physical character of the Northern Indians than Hearne, and from him we have the following specific information on the subject of puberty. "The girls among the Northern Indians after the first menstruation wear a small veil for some time, as they are now considered marriageable, though some at the time are not more than thirteen; while others, at the age of fifteen or sixteen, are reckoned children though apparently full grown."* In Franklin's journal this account is indirectly corroborated. Among the Cree Indians," Dr. Richardson remarks, "the women marry very young." And Mr. Back relates the case of a copper-mine girl under sixteen, who had already belonged to two husbands in succession.† Again, those writers tell us that the Indian girls at the forts, particularly the daughters of Canadians, are frequently wives at twelve and mothers at fourteen years of age. More than one instance came under their notice of voyagers "taking to wife a poor child scarcely ten years old."‡

From the Indians we proceed to the Esquimaux, a singular people, whose country the reader may trace, in imagination, if, when he has adverted to the shores of east and west Greenland he will cross from Cape Farewell to the American continent, and skim along the vast shores of Labrador and Hudson's bay; then northward to the inlets and islands described by Parry, and again westward, keeping the rim of the polar sea, and crossing the mouths of the copper mine and Mc. Kenzie rivers to Behring's Straits and Norton Sound. The whole of this tract is peopled or traversed by Esquimaux.

Their physical character is strikingly uniform. According to Capt. Parry, who has given a minute description of those with whom he associated at Winter Island and Igloolik, they are rather well formed, and by no means an ill-looking people. "There were three or four grown up persons," says he, "of each sex, who, when divested of their skin dresses, tatooing

* Hearne, p. 314 † Franklin's First Journey, p. 60-254. ‡ Franklin, p. 86.

and dirt, would have been considered pleasing looking, if not handsome people, in any town in Europe.”* A party of the same nation encountered by Franklin’s people, near the mouth of the Mc. Kenzie river, were equally good looking and very robust.† Their gross and indiscriminate gluttony is scarcely to be credited, and their food being exclusively animal, they become extremely plethoric, and bleed at the nose on the least exertion. Indeed this is an accident so very common that it may be said to be characteristic of the Esquimaux.‡ In the intercourse between the sexes, no people are more libidinous and dissolute.§

In the absence of almost all direct allusion to the period of female pubescence among this race, our only resource is indirect testimony, a species of proof to which I have no wish to attach more weight than it merits. In Captain Lyon’s “Private Journal” where the manners of the Esquimaux are portrayed with singular spirit and humour, mention is made, incidentally, of a pretty, well grown Esquimaux girl about fourteen years of age, the wife of a man, whose interminable and most barbarous name the reader may have the pleasure of spelling, if he will turn to page 230 of the Journal in question. Of another girl it is said, “this matron who, we found, was actually married to and lived with Kongolik, a fine young man of eighteen, was thirteen years of age only.” Parry has mentioned a similar case, that of a couple where the husband was from seventeen to eighteen, and the wife not more than sixteen. “These youthful marriages” continues the writer “are quite common among the Esquimaux of Igloolik.”|| In addition to this evidence, that of Baron Humboldt ought not to be withheld. After commenting on the very early puberty of the copper colored race of females, he says that the same is equally true of the

* Parry’s Second Voyage, p. 493. † Franklin’s Second Journey, p. 117.

‡ See the reflections of Mr. Edwards on this circumstance, in Parry’s Second Voyage, p. 544. It is noticed by Lyon, by West, (*Residence at the Red-river Colony*, p. 174) and by Chappell (*Voyage to Hudson’s Bay*, p. 74). The latter remarks, that “bleeding at the nose is a most common incident, and is certain to follow the least exertion.” It would be desirable to know if the quantity of the catamenia is in proportion to this state of excessive plethora. The Greenlanders it seems, resemble their American brethren in grossness of habit, and, from the same cause, excessive gluttony. They also, according to Crantz, “frequently bleed at the nose.” vol. i. p. 214.

§ Parry says, “It may safely be affirmed that in no country is prostitution carried to greater length than among these people.” Lyon was of the same opinion. Concerning the manners of the Greenlanders, both Crantz and Edge bear similar testimony.

|| Parry’s Second Voyage, p. 378.

Koriacs, the Esquimaux, and the tribes of northern Asia, “where girls of ten years are often found mothers.”*

I now direct the reader’s attention to the northern tribes of Europe and Asia. The Laplanders are the inhabitants of a vast, cone-shaped region, whose base, in about the 65th degree of north latitude, rests on Norway, Sweden, and Russia, while its apex, ten degrees higher in the arctic ocean, receives the name of North Cape. The Laplanders, a christian people, are divided into the stationary, who fish on the shores and rivers, and the nomadic, whose wealth is chiefly in rein-deer. They are characterized as being swarthy, short, of fair bodily strength, and exceedingly pliant and agile. Their food is chiefly fish, and the flesh and milk of the reindeer variously prepared.† According to Clarke the women are extremely ugly, many not exceeding three feet and a half in height, with features like those of the Chinese and Kalmucks, and skins of an uniformly bright yellow color.‡ There is reason for thinking them a branch of the Esquimaux family.§ Their sexual propensities, if we may credit writers who have visited them, do not partake of the frigidity of their climate.|| I regret that I can collect little to determine with precision the age when the women begin menstruating. According to Denman, as we have already seen, their catamenia do not flow till late, and then in small quantities, at long intervals, and sometimes only in the summer. This he asserts on the authority of Linnæus. On turning to the passage in the *Flora Lapponica* to which Denman refers, I find nothing whatever said of the age at which the menses *begin*; but, as the passage is curious, the whole is inserted below.¶ Their age of marrying is given circumstan-

* Personal Narrative, vol. iii. p. 335.

† Linnæus’s *Tour in Lapland*, vol. i. p. 168. and Canute Leem’s *Account of the Laplanders*, in *Acerbi’s Travels through Sweden &c.*, p. 187. They are said to consume a great deal of flesh meat.

‡ *Clarkes’ Scandinavia*, vol. i. p. 406.—According to Brooke, most of the shore Laplanders have fair complexions, light eyes and hair. *Winter in Lapland*, p. 43.

§ “According to the account given by the Moravian Missionaries, a Laplander may be employed as an interpreter with the Esquimaux.” Clarke, vol. i. p. 313.

|| “The Laplanders are exceedingly prone to lust.” Scheffer, p. 120, fol. Linnæus in his *Tour* hints at the same thing.

¶ MUSCUS ALBUS. Hoc etiam musco catamenia excipere abstergereque feminas Lapponicas mihi relatum fuit. Naturam œque hic ac alibi sibi similem esse feminasque in Lapponia ac alibi legibus menstrualibus obedire, dubium nullum est, licet hæ cruoris minorem fundant copiam innocentissimæ. Fuere et femine plures hic, quas vidi per totam suæ vitæ periodum ab ac lege exceptæ, licet hæ maritatæ steriles persistent. Novi et juvenulas quæ non hyeme, sed sola modo æstate has observabant crises; imo et alias quæ semel in anno purgabantur, et hæ, quotquot vidi, pedes œdematosos habebant. *Flora Lapponica*, 415.

tially by Clarke. The Swedes it seems prohibit early marriages among themselves, but do not in this particular interfere with the Laplanders. They marry, he assures us very early; the men seldom later than eighteen nor the women than fifteen.* In the same work he remarks that it is rare to see an unmarried Laplander at twenty.† It cannot be reckoned otherwise than strange that, if the women, as Denman and others assert, are really the latest of the species in acquiring the aptitude for marriage, they should of all Europeans be the earliest to make the experiment. Their presumed late pubescence is, in all probability, a mere fable.

The Slavonians or native Russians, come next in order. They people a great country, a considerable portion of which is beyond the 60th degree of north latitude. The women are generally brunettes, plump, robust, and vigorous. Many have brown or light hair, and not a few are to be reckoned beautiful. Tooke has furnished a luminous history of their physical peculiarities, and fortunately his intimate knowledge of the Russians and his long residence among them, render him a valuable authority.‡ “The girls,” he tells us, “arrive early at maturity, numbers in their twelfth or thirteenth year: but many of them lose their beauty after being married a couple of years. The frequent use of the bath promotes an early developement, and an early decay.”§

The Samoides are a tawny, squat, miserable race of pagan savages, subjects of the Russian empire. They are found along the shores of the Frozen Sea on the European side of the Jugorian Mountains, east of these, on the river Oby, and elsewhere. According to Tooke they are mature at a very early age. “Most of the girls are mothers in the eleventh or twelfth year, but their marriages are rarely prolific; and before thirty they have already done bearing.”||

Eastward from the Oby many a league along the shore of the Frozen Sea, we come to the great northern promontory of Asia, inhabited by the Tschuktschi. Their country extends from the Katirka, a river flowing eastward into the sea of Ana-

* Clarke, vol. i. p. 401. † Clarke, p. 322.

‡ Tooke's Russian Empire. Mr. Tooke was a member of the Imperial Academy of St. Petersburg, resided in Russia during nearly the whole of the celebrated Catherine's reign, and drew his information, as well from personal observation, as from the conversation and writings of the travelling academicians. As the subject of human fecundity is well known to have deeply interested the philosophic Empress, this, and the kindred inquiry regarding the physical peculiarities of the Russian nation, necessarily engaged much of the attention of these perambulating literati.

§ Russian Empire, vol. i. p. 333. || Russian Empire, vol. ii. p. 286.

dir, to Behrings straits. South of these tribes, on the banks of the Katirka, are the Koriacks, a rude nomadic people.* The Tschuchuktschi and Koriacks speak the same language, and, according to Lesseps and Cochrane, are the same people. In physical character and customs they are allied to the Esquimaux.† It is of these tribes that Humboldt says (as already quoted) their females are often mothers at the age of ten years.

South of the Koriacks are the Kamtschadales, inhabitants of the peninsula from which they take their name, a swarthy uncivilized race, of short stature. They are allowed to be a distinct people from the more northern tribes. In Krammacker's history of Kamtschatka we have the physical character and customs of the women minutely described, but nothing is said by any author I have consulted, to shew the age at which they arrive at maturity, excepting a remark of the French traveller Lesseps. He tells us, after descanting on the amorous behaviour both of the native and Russian ladies, that "the precocity of the girls is astonishing, and seems not to be at all affected by the coldness of the climate."‡

Part 3.—Having thus briefly narrated what I have been able to collect respecting the age of female puberty in cold countries, I will now follow the same course in reference to warm climates. As the works that treat of southern regions are numberless, and the inquiry too extensive to be dealt with in a short essay, it is needful that I should limit my observations to the people of a few well known races.

We have seen that physiologists are remarkably unanimous and explicit in asserting, that the warmer the climate the earlier the appearance of the menses, and *vice versa*. There are questions naturally springing out of this doctrine, the solution of which they have not attempted with the same confidence. It may be asked for example, whether in countries where the catamenia begin to flow, as is alleged, at the age of nine years this sexual precocity is united equally to the mind and body of a child? or whether it be the mind only that is infantine? or whether the whole being partakes of this early developement? Lastly, assuming that there is a correspondence between the first and the after stages of life, as to duration, is the term of existence really briefest within the tropics, and does it lengthen as we approach the north? What physiologists have not

* Simeon Navikoff's Voyage in Coxe's Russian Discoveries, p. 43.

† Prichard's Physical History of Mankind, vol. ii. p. 309.

‡ M. De Lesseps's Travels in Kamtschatka, vol. i. p. 102.

dared to attempt has been fearlessly performed by Montesquieu. "Women in hot climates," says this great philosopher, "are marriageable at eight, nine, or ten years of age. Thus in these countries infancy and marriage almost always go together. They are old at twenty. Their reason therefore never accompanies their beauty. When beauty demands the empire, the want of reason forbids the claim. When reason is obtained, beauty is no more. These women ought then to be in a state of dependence, for reason cannot procure in old age that empire which even youth and beauty could not give. It is therefore extremely natural that in these places, a man, where no law opposes it, should leave one wife to take another, and that polygamy should be introduced."*

If these premises be only granted, namely, that the women of warm climates are really marriageable at eight, nine, and ten years of age (and the writer has undoubtedly the authority of physiologists for the fact) it is not easy to perceive, on grounds merely philosophical, what objection can be taken either to the reasoning, or the conclusions. One other inference, the gallantry of the Frenchman doubtless prevented him from drawing, notwithstanding that his theory necessarily involves it. It is one that cannot fail to be highly encouraging to every friend of arctic civilization, (though somewhat disadvantageous to the ladies of Europe) as it secures the ultimate supremacy in rank, among their sex, to the women of the frozen climates of Greenland and Igloolik. Instead of arriving at maturity at the infantile age of tropical, or the somewhat more mature age of European girls, they, of course, are not even marriageable till nineteen or twenty, a period when the mind and body are alike fully expanded, and are therefore sure, when civilized, to possess in the most eminent degree all those elegant and solid accomplishments which southern women, according to Montesquieu, do not attain till long after puberty, when beauty is already on the wane. Perhaps it is even not too much to anticipate, that in some future time, the Esquimaux ladies, while, like their own "northern lights," they cheer and illumine their native regions, may astonish with their fame the countries of the south, and reign the undisputed arbiters of taste and fashion, from the Pole to the Line.

To return from speculations to facts. The islands of the Indian Archipelago support many millions of inhabitants in every grade of civilization, from the polished Malay to the cannibal of Borneo, and the wretched Papua. These islands, whose soil and climate are generally fertile and delightful, ex-

Montesquieu's *Spirit of Laws*, (E. T.) vol i. Book xvi.

tend with their connecting sea through 30 degrees of latitude, from the parallel of 11°. south, to 19°. north. The natives are divided into the brown, of moderate stature but muscular and robust, and the black, who are dwarfish and feeble. Their diet compared with that of Europeans is extremely frugal. “Under all circumstances,” says Crawford, “a pound and a quarter of rice, a few spices and a meagre portion of animal food, most frequently fish, is an ample daily allowance for an adult.”* The same author has expressed himself in very precise terms concerning the age of puberty in these islands. Owing to his profession, his eminent literary character and long residence among the natives, his authority is peculiarly valuable. “Their minds,” he remarks, “from the moral agency under which they are formed, certainly acquire a kind of premature ripeness, earlier than in Europe, but *their bodies do not*. Puberty comes on at the same age as in Europe, the body continues to grow as long, women bear children to as late a period of life, and longevity, as a proof of all the rest, I believe to be just as frequent as here.”† Other authors, it must be confessed, represent the matter differently, but it is quite obvious that they have regarded early marriages, which obtain universally in Pagan and Mahomedan countries, and even among Christian nations in a low state of civilization, as identical with early puberty; an assumption which however natural, we shall shew to be erroneous. Of the Javanese, Sir Stamford Raffles has asserted, that “both sexes arrive at puberty very early, and the customs of the country, as well as the nature of the climate, impel them to marry young; the males at sixteen, and the females at thirteen or fourteen years of age; though frequently the females form connections at nine or ten, and, as Montesquieu expresses it, infancy and marriage go together.”‡ This passage, though evidently written under the influence of the profound author of the *Esprit des Lois*, is extremely valuable, when taken in conjunction with the following admissions of an opposite character, both, as corroborating the opinions of Crawford, and as shewing the risk which a writer must always incur of falling into palpable errors and inconsistencies, when he mixes up preconceived notions with observed facts. “Though women,” says Sir Stamford, “soon arrive at maturity and enter early into the married state, they continue to bear children to an advanced age. And it is no uncommon thing to see a grandmother still make an addition to her family.”§ Again, “The term of life is not

* Indian Archipelago, vol. i. p. 40. † Indian Archipelago, vol. i. p. 30.

‡ Raffles's History of Java, vol. i. p. 70. § History of Java, vol. i. p. 71.

much shorter than in the hot climates of Europe. A very considerable number of persons of both sexes attain the advanced age of seventy and eighty, and some even live to a hundred and upwards: nearly the same number survive fifty as in other climates."* It is hardly necessary for me to observe that since women bear children so late, as sometimes till they are grandmothers, and the inhabitants in general attain the European longevity, their presumed very early maturity, is improbable, and not to be admitted without clear and ample proofs, and these, if they exist, have never yet been adduced.†

(To be continued.)

ART. VIII.—*On the Grinders' Asthma.* By ARNOLD KNIGHT, M. D., Physician to the Sheffield General Infirmary.

GRINDERS' ASTHMA is the name given by the Grinders themselves, to that form of consumption which prevails amongst the workmen, who are employed in grinding the different kinds of cutlery goods manufactured in Sheffield, and the neighbourhood. The name conveys but a very imperfect idea of the disease, since the grinders' asthma bears scarcely any resemblance to asthma, properly so called, except in those symptoms which are common to almost all affections of the chest. It is probable however that it has been so designated not only from this vague resemblance, but also from a natural desire on the part of the grinders to conceal the fatal character of their complaint, by assigning to it the name of a disease, which does not necessarily interfere with the duration of life.

The articles which are ground in this neighbourhood are forks, awl-blades, fire-irons, razors, scissors, pen-knives, table-knives, large pocket-knives, files, joiners' tools, saws, sickles,

* Raffles, vol. i. p. 69.

† Crawford's explicit declaration concerning the period of puberty in the Indian Archipelago we have seen: he is little less decided in what he says of the same circumstance among the Burmans. "As to the continuance of child bearing," he observes, "it is just the same as in other parts of the world, beginning with the age of puberty and ending between forty and fifty."—*Journal of an Embassy to Ava*, p. 467. To the period of this physical change in the girls of China, the following law of the celestial empire may be considered to have pretty clear reference. "Criminal intercourse under twelve years of age shall be punished as a rape in all cases."—*Ta Tsing Leu Lee*, by Sir Geo. Staunton, p. 404. The law must certainly be taken to imply that no Chinese girl can *naturally desire* such intercourse under twelve. Our own law is nearly the same, making it felony to have intercourse with a child under ten, and a misdemeanour if she is above that age and under twelve.

and scythes. Some of these are ground on dry grind-stones, others on wet grind-stones, hence the grinders are divided into two classes, the dry, and the wet grinders—and there is a third class, who grind both wet, and dry—together they amount to about two thousand five hundred, of this number about one hundred and fifty, viz. eighty men and seventy boys are fork grinders—these grind dry, and die from twenty-eight to thirty-two years of age.* The razor grinders grind both wet, and dry, and they die from forty to forty-five years of age. The table-knife grinders work on wet stones, and they live to betwixt forty and fifty years of age. It may appear extraordinary that a disease, committing such ravages amongst so large a number of workmen, should have hitherto excited so little attention either in the profession or out of it. In most works which treat of pulmonary diseases, it is indeed mentioned that the fine particles of dust, and steel, which are evolved in certain mechanical processes are frequent causes of consumption, but I am not aware that any treatise has been expressly written upon the subject, except by Hecquet in his “*Maladies des Artisans*,” and by Dr. Johnstone of Worcester, in the 5th vol. of the “*Memoirs of the Medical Society of London*.” The former of these papers I have not seen, and the latter refers exclusively to needle pointing, a branch of grinding which is not carried on in this immediate neighbourhood. It must however be observed, that the grinders’ asthma, as it exists amongst the Sheffield grinders, is a disease of recent origin. Until the beginning of the last century, grinding was not a distinct branch of business, but was performed by men who were also employed in forging, and hafting; hence they were exposed but seldom, and then only for a short time, to the pernicious effects of grinding. They worked also in large, lofty rooms, which did not contain more than six or eight stones—were open to the roof—without windows—and with the cog-wheel always in the inside—thus, such a circulation of air was constantly kept up, that the small quantity of dust raised from these few stones was soon carried away. The wheels were always situated in the country—by the side of running streams, and frequently two or three miles from the habitations of the workmen, so that they had the advantage of pure air, and moderate exercise, in passing to and from their employment. Moreover, for several months during each summer, they could not work more than four or five hours a day,

* Some exceptions to these general remarks may be met with, amongst those who have continued to work at open wheels in the country, and amongst others, who have been absent from their employment for many years together as soldiers.

owing to the scarcity of water. The grinders at that time lived chiefly in the country—had less intercourse with each other, and were consequently less exposed to those excesses which frequently prevail, where large bodies of workmen are congregated together—they were indeed distinguished for their simple manners, and temperate habits. This was the golden age of the grinders.

About the beginning of the last century, the division of labour was gradually introduced into the manufacture of cutlery, and grinding became the sole employment of the grinder. Sometime after the middle of the same century, several grinders were observed to die of complaints nearly similar. The attention of their companions was excited, and they found the complaint was peculiar to themselves; still, however, it was far from being common, for they continued to enjoy all the advantages which their predecessors had possessed, except that, being no longer employed in hafting and forging, they passed all their working hours at the grinding wheel.

Towards the close of the last century, it was found that the business of grinding had so much increased, that the grinding-wheels already established were insufficient; but as every fall of water within five or six miles of Sheffield was occupied by wheels, it was impossible to add to their number. In this emergency, those connected with the trade resolved to avail themselves of the power of steam, and in the year 1786, the steam-engine was applied to the purposes of grinding. A great revolution then took place in the circumstances of the grinder. He now worked in a small low room, where there were eight or ten stones, and sometimes as many as sixteen persons employed at one time. The doors and windows were kept almost constantly closed, a great quantity of dust was evolved from so many stones, and there was scarcely any circulation of air to carry it away. The steam-engine, unlike the stream that had formerly supplied his wheel, allowed him no season of relaxation—it worked on an average eleven hours in the day, and six days in the week. The grinders began to reside more generally in the town—most of them lived near their respective wheels; their habits became less temperate, whilst the steady and industrious having now an opportunity of working as much as they pleased, died at an earlier age than even the idle and dissipated. So general has this destructive malady become of late years, that the result of some inquiries, made in 1822, shewed that out of two thousand five hundred grinders, there were not thirty five who had arrived at the age of fifty, and perhaps not double that number, who had reached the age of forty five: and out of more than eighty fork grinders, exclu-

sive of boys, it was reported that there was not a single individual thirty six years old!*

As all attempts to cure the grinders' asthma, whilst the grinder continued to follow his employment, had failed, it was natural that the parties who were interested, should endeavour to find out some means of preventing it. Many expedients have been suggested. Dr. Johnstone, in the paper alluded to, proposed that the mouth and nostrils should be covered with crape; but in a short time the dust from the stone, and the moisture of the breath rendered the crape nearly impervious, and then the heat and oppression of the breathing became intolerable. Another contrivance was suggested by W. Abraham, a most humane and intelligent inhabitant of Sheffield. It consisted of magnets so arranged as to intercept the particles of dust, in their passage to the mouth and nostrils. A full account of this ingenious invention may be found in the "Transactions of the Society of Arts, vol. XL. page 135." So highly was it valued by this Society, that they presented Mr. Abraham with their large gold medal: and his fellow townsmen, in order to shew the interest they felt for the grinders, as well as to reward Mr. Abraham's ingenuity, requested his acceptance of a service of plate value one hundred pounds. Some idea may be formed of the importance attached to this invention, from the following certificate,† which was signed by fourteen most respectable persons, three of whom were experienced medical practitioners, and most of the others proprietors, or occupiers of grinding wheels.

"SIR:—Having seen your invention of the Magnetic Safety Guard, and Dust Retainer, or life-preserving apparatus, in operation by grinders upon the dry stone; we think it due to you to bear testimony to its surprising efficacy. The almost impalpable dust, and particles of metal, which are arrested by the arrangement of magnets, and the retainer, is a sight at once alarming and gratifying. To witness the clearness of the atmosphere in a grinder's room of that description when they are in use, and its rapid impregnation with the dust of the metal and stone, on their removal, is enough to produce a thorough conviction of the utility of the invention. Indeed the satisfaction manifested by the men who use them, and their statement with how much more ease to themselves they can go through their work, and that they feel less oppression and annoyance in a day's labour with them, than in a quarter of an hour

* I am informed there is a fork-grinder above fifty years old who has worked at a steam-wheel—he is a man of irregular habits.

† This certificate is not dated, but it was written about the beginning of the year 1822.

without, sufficiently evinces that the deleterious matter has been arrested, and detained, in its fatal progress to the lungs, where, if it once arrive, a complaint is induced which has hitherto baffled the skill of the Medical Profession. We anticipate incalculable benefit from their general adoption, and can see no reason whatever to doubt that they will most materially prevent that desolating disorder."

" To W. ABRAHAM."

Such were the favourable auspices under which this invention was submitted to the attention of the grinders; yet this "life preserving apparatus" was never generally adopted by them, nor even partially for longer than five or six months. The trouble of arranging the magnets, and of removing the dust as it collected upon them, was too great for the grinders; besides, it was the metallic particles which the magnets were chiefly calculated to arrest, and there is reason to believe, from facts that will be adduced hereafter, that the grit dust is not only the most copious, but also the most injurious part of what is inhaled by the grinder. Mr. Abraham's merit however was not confined to the application of magnets for the relief of the grinders, he suggested another contrivance, which though less scientific has proved of more practical utility, by giving rise to that series of improvements, which have been since more or less adopted. It consisted of an additional apparatus which was formed of a piece of coarse sacking, or flannel, attached to a frame of wood; this was to be placed before the stone, and closely behind the safety guard of magnets, so as to secure all the dust which they had failed to arrest. This sacking, or flannel was to be kept constantly wet, and the dust was to be shaken out of it when sufficient had been accumulated. The next improvement was made by Mr. John Elliot. He made a box, and lined it in the inside with coarse canvass, the box was wider at one end than the other; the wide end was applied to the stone, and the canvass, when used, was to be kept moist with water; it was however soon discovered, on experiment, that the dust and the air from the stone dried up the moisture, and rendered the box useless.

But whilst Mr. Elliot was making experiments with his box, he observed that the dust was driven with great force into it, and on opening the smaller end, and applying his hand to it, he found that the revolution of the stone produced a current of air, sufficiently strong to drive the dust *through* the box. This fact immediately suggested a new idea—he attached to the box a kind of chimney, and covered the top of this chimney with crape, in order to allow the air, but not the dust, to pass through it. Some of the finer dust however still passed through; to arrest this, a piece of wet cloth was stretched on

two supporters a little above the crape. This improvement quickly led to another—the chimney was carried through a hole in the wall, or a window, and the dust was thus driven entirely out of the room. But it was found that the current of air, produced by the revolution of the grind-stone, was not of itself sufficiently strong to carry the dust away effectually, and it was ingeniously proposed to encrease its power, by placing a fan at the entrance of the chimney—this fan to be turned by being connected with the machinery of the steam-engine. The effect of this simple contrivance was extremely gratifying. The dust, as soon as it was evolved from the stone, was carried through this chimney with very great velocity; and a sanguine hope was entertained, that the means had at length been discovered of preserving the grinder from the injurious effects of his trade. This apparatus was for some time generally adopted by the grinders, with such slight modifications as suited the convenience of particular individuals. It did not however entirely answer their expectations—disappointment produced indifference—and I believe it is very little used at present. It was found by experience, that notwithstanding the quantity of dust driven off through the chimney or flue above described, still a considerable portion of the finest dust was carried round by the stone, and rising up under the face of the grinder, was drawn in with his breath. It was proposed to obviate this defect, by directing a stream of air along the under side of the stone so as to meet this current of dust, and check its further progress towards the lungs of the grinder. But the great interest which had been excited a few years before had now died away, and I believe this plan has never been tried. I may also mention that an apparatus had been invented by Mr. Thomason of Birmingham, a model of which he very handsomely presented to the Literary and Philosophical Society of Sheffield. It was too complicated and expensive for general use, and would apparently, for it was never tried, have been less efficient than some of those contrivances already detailed.

It is the opinion of those who have paid considerable attention to the subject, that much might be done towards lessening the injurious effects of grinding. At present both wet and dry grinding are frequently done in the same room. It seems desirable, that these two processes should be carried on, as much as possible in separate rooms, so as to preserve the wet grinder from the effects of the dust raised in dry grinding. A large quantity of dust settles on the machinery during the night, and is diffused through the room in the morning, as soon as the engine is set in motion; thus, before even the grinder be-

gins to work, the atmosphere is so loaded with dust as to prove extremely irritating to the lungs of one unaccustomed to breathe it; this additional source of pulmonary irritation might be removed by the machinery being properly dusted every morning. The idle, and even the dissipated frequently live longer than their more abstemious companions; as this longer duration of life is attributed to their washing down the dust by drinking freely, it is made a pretext for habits of intemperance: in reality it is owing to their being a shorter time at the grinding wheel: this fact would however suggest the propriety of grinders being allowed to work only a certain number of hours each day, and perhaps only a certain number of days each week. No work ought to be done on dry stones that can be done on wet ones. When a new wheel is erected, it ought to be so constructed as to allow of large main flues being laid on each floor—a powerful current of air to be kept up through these flues, and a smaller flue from each stove to open into them. The current of air being driven through the flues by means of machinery connected with the steam engine, the atmosphere of the rooms might be kept comparatively free from dust, without any additional attention on the part of the grinder. Fork grinding is the most destructive kind of grinding carried on in this neighbourhood, and, as it requires the least skill, it is the most easily learnt. Might not criminals, who have grossly violated the laws of their country, be condemned for life to fork-grinding, as for minor offences they are sentenced to the treadmill?

(To be continued.)

ART. IX.—*On the Dysentery which occurred in the Wakefield Lunatic Asylum in the years 1826, 1827, 1828, and 1829.* By W. H. GILBY, M. D., Physician of the Establishment, &c.

THE following narrative must in many respects be imperfect, and the author feels great reluctance to approach a subject, which has been so admirably illustrated by Dr. Cheyne in the Dublin Hospital Reports, in a paper of which it is impossible to speak, otherwise, than in terms of the highest eulogy.

The only novelty will be in the class of patients who were the subjects of our care, and this very circumstance is precisely that which embarrasses the writer, and renders him unable to give the usual medical interest to the subject. In the first place, he was generally cut off from the patient's own reports of his symptoms, the treatment was therefore often more a matter of

guesswork than of judgment. In the next place, in lunatics the sensibility to all impression is so much deadened, by the weakening of the cerebral influence, that generally speaking, little or no information as to the seat of pain could be gathered by touch or pressure with the hand. Moreover, the common feelings of human nature which so often modify and influence the course of a complaint—of pain and irritation, of fear and hope for the future, and those arising from family ties were almost extinct in the subjects of our care. So that altogether an ordinary practitioner, except from the nature of the stools, would hardly have recognized the complaint. This remark is applicable not only to dysentery, but to other febrile and constitutional affections occurring in Lunatics. In ordinary cases, disease invades structures spiritualized, as I may say, by the brain and nervous system; but in lunatics the brain and nerves are so shattered and impaired, that maladies act on matter almost inert, with just so much nervous energy, as to make it organic, but without that quickening, subtilizing influence, which gives tone and sensibility to the sane and healthy individual.

These remarks I hope will, in some measure, excuse the imperfections of this paper.

It appears from the journals of the asylum, which are very carefully kept, that in the first two or three years after it was opened, cases of diarrhæa, which in many instances proved fatal, were frequently occurring. In the dissection of these cases, reddening of the small intestines chiefly was discovered, but very seldom marks of ulceration. A few cases of dysentery were now and then observed, but it was not until the year 1826, that this complaint became so frequent, as to be a real cause of alarm. I cannot, I think, better describe the extent of its prevalence, and the causes which appeared to me to produce it than by quoting part of the letter, which in the spring of last year, I addressed through Mr. Heywood, to the visiting magistrates on the subject, and which was followed by the enlargement of the building, and the removal of the several nuisances of which I complained.

“ From the last report, you will learn the prevalence of that truly dangerous complaint dysentery, to the amount of fifty-five cases during the year 1828. In fact, since my appointment in March of that year, I may say we have never been a fortnight free from the disease, and it is not only during the last year, that this scourge has ravaged the house, but it has shewn itself at different times since July 1826. Of the above fifty-five cases about one in four died. This is a fearful mortality, but it is not greater I believe than what occurred in the Cork, Dublin, and other hospitals in the year 1818,

when this malady was widely disseminated. The fatality of dysentery will appear more striking, when it is stated, that the proportion of deaths in typhus wards, is, I believe, seldom more than one in ten, and sometimes not more than one in fourteen.

The occasional occurrence of dysentery would not be surprising, but, when it has made its appearance in an establishment during four successive years, and when instead of confining its visitation, as it commonly does, to summer and autumn, it has been rife in our wards, during the whole of last year, and is even now consigning other victims to the grave, I think it is evident some more than ordinary cause must exist for so baneful an intrusion. The chief cause I attribute to the crowded state of the asylum.

If the present dimensions of the asylum were occupied by sane patients, I admit there would be perhaps room enough for the present number, but the case is very different, when the description of inmates is considered, seventy of whom, out of two hundred and sixty, soil their beds every night. This state of things no doubt was had in review at the building of the asylum, as the present space was not then deemed more than adequate for the reception of one hundred and fifty, and of course it never could have been intended that an asylum built for that number, should be made to hold two hundred and sixty.* Another source of malaria exists in the situation of the *wash-house*, which is miserably small, and which, incredible as it may appear, is placed in the very heart of the building, adjoining the kitchen. The stench and abomination from such a mass of filthy linen may well be conceived to act injuriously on the whole house, but particularly on those unfortunate patients, who are employed in this loathsome office. Another point to which I would draw your attention is the drainage of the house. As far as I can understand the matter, nothing can be conceived more infamously contrived, than the building is in this respect. Imagine your house in Wentworth-street, surrounded by four reservoirs, containing the filth and washings of fifty five houses, and these pools within three yards of your house. Would you not conceive such a circumstance very likely

* This view of the subject is, in some measure, strengthened by the following table of admissions and deaths, taken from the able reports of Dr. Ellis. The great mortality in the first year may perhaps be referrible to the newness of the building, to the inexperience of the keepers, and to the imperfect state of discipline unavoidable in a recent institution.

In 1819,	Deaths	14	out of	138	inmates,	.	.	or	1	in	9.8
1820,	..	12	..	172	..	.	.	..	1	..	14.3
1821,	..	19	..	214	..	.	.	..	1	..	11.2
1822,	..	19	..	258	..	.	.	..	1	..	13.5
1823,	..	23	..	308	..	.	.	..	1	..	13.3
1824,	..	30	..	353	..	.	.	..	1	..	11.7
1825,	..	53	..	377	..	.	.	..	1	..	7.1
1826,	..	45	..	361	..	.	.	..	1	..	8.
1827,	..	42	..	262	..	.	.	..	1	..	8.6
1828,	..	42	..	375	..	.	.	..	1	..	8.9
1829,	..	50	..	375	..	.	.	..	1	..	7.5

to affect the health of your family? This however is precisely the condition of the asylum. The average population of fifty five houses will be about equal to that of the asylum, and all the scourings and ordure of this great family are made to flow into four tanks, placed within three or four yards of the wards. If you agree with me that this nuisance might be mischievous to a dwelling where the family is small, and where there is abundance of space, how much worse will it be in the case of an edifice overstocked with inhabitants, and these already containing the germ of disease.”*

I shall now proceed with what I have to say with regard to the medical history of the complaint. It was observed, that old and incurable lunatics, or those who had degenerated into a state of fatuity were more especially liable to the disease; and, in them, the malady had often obtained a march of two or three days, before it was detected. The insensibility of lunatics to pain has often been observed. I have often known an idiot sit quietly without moving his foot, whilst another maniac was tearing off his toe nail, and I remember the dissection of a female, in whom the bowels were agglutinated by recently deposited lymph and otherwise exhibited the highest possible degree of inflammation, who had only refused her food the day before, and was heard singing two hours before she died. From this indolence of feeling, it was oftentimes not until the sheets and linen were observed soiled with blood and slime, that any suspicion of the disease arose. Even in those in whom sensation was more perfect, the amount of pain did not seem answerable to the dreadful ravages observed after death. The tenesmus seemed sometimes distressing, and sometimes a feeling of internal burning heat was complained of, but, in few cases, was there any great tenderness on pressure. Even in cases ending fatally, it sometimes required downright kneading with the hand to detect the seat of pain, and, more frequently than otherwise, tension and external heat were wanting. The refusal of food was oftentimes the first indication of the complaint, and sometimes, though rarely, the disease was announced by vomiting. In some cases, the appetite seemed

* The good that has resulted from the alteration of the wash-house and the drains is clearly evinced, in the following sentence from Dr. Ellis's last report, for 1829. "A few fatal cases of dysentery occurred in the early part of the year, but for some time past, the house has been quite free from the complaint, and is now altogether in as healthy a state, as it has been, since it was opened." The new drainage was completed last Autumn, and until the new wash-house was built, temporary sheds were erected. apart from the house, with the immediate effect of rendering the asylum sweeter and more wholesome. The total number of inmates from January 1st, 1830, up to June 1st, 1830, is 302, out of these, twenty-two have died, or 1 in 13.7. By comparing this with the foregoing table, the increased healthiness of the place is still further demonstrated.

even to continue; so much so, that individuals have been seen sitting up eating greedily of rice, sago, or milk porridge, in the very height of the malady. It was evident that these peculiarities arose from the peculiarity of the patient, and not from any novelty in the type of the disease, as when other individuals in the house, not lunatics, were attacked, the patient suffered greatly from sickness, and abdominal tension and pain. Nothing could exceed the sufferings of poor Mrs. Anderson the housekeeper, from the violence of these symptoms. The pulse at first was but little affected, either in feel or frequency; as the complaint heightened, it would become quicker, but it seldom had either a full, hard, or jerking character. The tongue varied much, sometimes it was thickly loaded, at other times merely whitish, but more frequently hardly affected. As the disease advanced, and as the powers of life gave way it would become dry, and like the outer surface of a cured tongue. The skin was generally cool, but *without moisture*. Urine sometimes scanty and high colored, but, in many instances, the secretion was by no means deficient. The most distressing symptom was the bearing down and tenesmus, and the feeling of internal scalding about the anus. If any intelligence remained, this was generally a subject of bitter complaint, and, even when the faculties were gone, the sensation of pain was frequently evinced, by the writhing of the face and lips, during the voidance of the fœces. The discharge varied a good deal, the true dysenteric stool had no feculent smell or appearance, it was either blood or slime, or a substance resembling white toasted cheese, or full of shreds and skins. The mucus or slime varied in color, exhibiting different shades of yellow, green, leaden or olive color, but the worst of all was like a kind of paint of a dark mahogany hue, and, where that was seen, hardly any patient recovered. It was often remarkable to witness the difference in the character of the discharge, in the space even of an hour. In that time, after consisting of nothing but blood and slime, the stools would suddenly assume a good bilious hue, and even approach to a healthy consistence, and this variety of good and bad motions sometimes continued for several days, and was even observed in cases terminating fatally.* The much talked of scybala were not observed. The same symptoms prevailed for the most part during the whole course of the complaint, the patient, unless relieved, gradually sinking under the exhaustion from tenesmus, purging, and intestinal ulceration. The passive state of the stomach

* My friend Dr. Thomas informs me he used to regard it as a fatal symptom.

all the time was truly remarkable, and appeared to me to be the cause of a much longer protraction of life, than when the malady occurred in a person whose faculties were entire. In spite of every attention, the housekeeper sank after six days' illness, whereas, a lunatic was seldom carried off before eight or ten days, and the average duration was, I think, much beyond that time.

With regard to the treatment, so far as my own experience and that of my colleagues Dr. Thomas and Dr. Ellis, went, I found nothing so beneficial as bleeding by leeches, and the rapid administration of mercury. Calomel combined with opium was the mercurial generally used internally, in doses of one or two grains of each, every three or four hours, and sometimes, at similar intervals, five grain doses of calomel were employed, and apparently with advantage. It appeared to me, that the calomel and opium sometimes itself proved a source of irritation, and having, at one time, lost several cases in succession treated with calomel and other measures, I determined to restrict myself to local bleeding by leeches, and frequent mercurial frictions, and certainly my cases prospered more under this method, than any other.

The bleeding was almost always performed by leeches applied on the tract of the colon, the general seat of pain, or else round the anus. I often applied them to the anus, and I should say they produced more relief, when applied this way, than when attached to the abdomen. Even with regard to leeches, we were obliged to be moderate as to the number employed. As much relief seemed to be obtained by ten or a dozen, as by a greater number, and unless employed early in the disease they seemed only to exhaust the strength, without any mitigating effect on the symptoms. Blisters were of course in use, but neither from them nor the turpentine cloths which I frequently used, was any decided benefit experienced. The pain and bearing down were often directly quieted by the leeches, and not unfrequently a temporary liberation of bile would occur, after a good dose of calomel and opium, or castor oil, but so far as my experience went, it was not until the mercury began to tell on the gums, that the dysenteric action was suspended, and the regular fœcal discharges were restored. It is a matter of common observation that maniacs long withstand the influence of medicine, and therefore it was always necessary to guard against the accumulating effect of the mercury, by a careful supply of nourishment, for analogous to what was said with regard to bleeding, such is the enfeebled state of the nervous energy, that any violent remedy would otherwise soon exhaust the strength of the patient. Sometimes, when the

mercury appeared to produce no effect on the gums, its effect on the system would be suddenly announced, by the stools becoming green and of a spongy consistence, something like the matted weeds in stagnant water. Nothing could look more unnatural than this kind of discharge, yet, both in asylum and in private practice it was almost always followed by recovery. Another indication of the mercury acting kindly was, in the softening and moistening of the skin, and the urine, instead of being scanty and high colored, becoming paler and more abundant.

A very useful medicine, after the tenesmus and inflammatory symptoms had been checked by leeches and mercury, and where a bloody and slimy diarrhoea still continued, was a combination of acetate of lead with laudanum, in the proportion of one grain of the former to ten or twelve drops of the latter, every three or four hours. When the ulceration seemed to have stopped, and the purging was only the effect of a relaxed and irritable membrane, the sulphate of copper combined with opium, as recommended by Dr. Elliotson, was given with the happiest possible effect in many cases. My colleague employed hot fomentations with much advantage. I frequently used tepid stupes of alcohol and water, or diluted turpentine, but I did not think I found the benefit I had been accustomed to derive from such applications.

Most of the cases were examined after death, and after so harassing and fatal a complaint it was often curious, on laying open the abdomen, to discover at first sight so little indication of disease. Generally the colon appeared very much contracted, less even in caliber than a small intestine, and in several instances so narrowed as not to admit the finger without force, but otherwise the external appearance of the bowels seemed quite natural, and was most strangely contrasted with the dreadful state of disorganization in which the internal coat was involved. The internal lining of the small intestines was but little affected, but, on cutting into the caput coli, marks of active inflammation instantly declared themselves. The internal membrane was seen thickened, reddened, and, in some places, abraded. In tracing up the course of the gut, these signs of morbid action became every where more and more intense. At the transverse arch, ulceration was commonly observed in all its stages, the ulcers corroding frequently through the muscular coat, and, in two instances, even through the serous coat; in some places also, the ulcers seemed to have run into each other, and occasioned the appearance of large abrasions. The muscular layer was strangely thickened, so as to appear quite cartilaginous, but the greatest alteration was in the mucous

lining. It seemed to have lost all look of its former structure, being, where not ulcerated, thickened, roughened with a peculiar knotted appearance, or else broken down into a dark, olive colored, gangrenous looking pulp. This was the general character of the morbid alteration observed after death, and, as has been remarked by Dr. Cheyne, the disorganization was more complete, as we approached the rectum. The gall bladder was sometimes found full of dark colored bile, thick and tenacious like pitch. Contrary to the statements of several, the liver was seldom found to be the seat of much disease.

I shall not stay to debate the question whether dysentery be contagious or not—all I shall say is, that I should have thought my life in considerable jeopardy, had I been a keeper in active attendance during the prevalence of the complaint. Several of the nurses and keepers contracted the disease, and one woman, hired to wash the foul linen, had not been twenty-four hours at her duty, before she was most severely afflicted.

I may here observe, that if the views of some medical men were correct, that the likeliest way to remove insanity would be, by setting up some new derivative action, we ought to have had abundance of success, in restoring to reason our unfortunate patients. If a bodily change or influence could break the chain of distempered associations, it would be hardly possible to conceive a more potent remedy than dysentery, especially, when aided by such an auxiliary as mercury, and that to the extent to which we pushed it. But out of 103 cases, between July 1826 and the autumn of 1829, I can only instance two, that appeared to improve in mind during the dysenteric attack or immediately after, and both of these were recent cases, and would, in all probability, have recovered under the common discipline of the house.

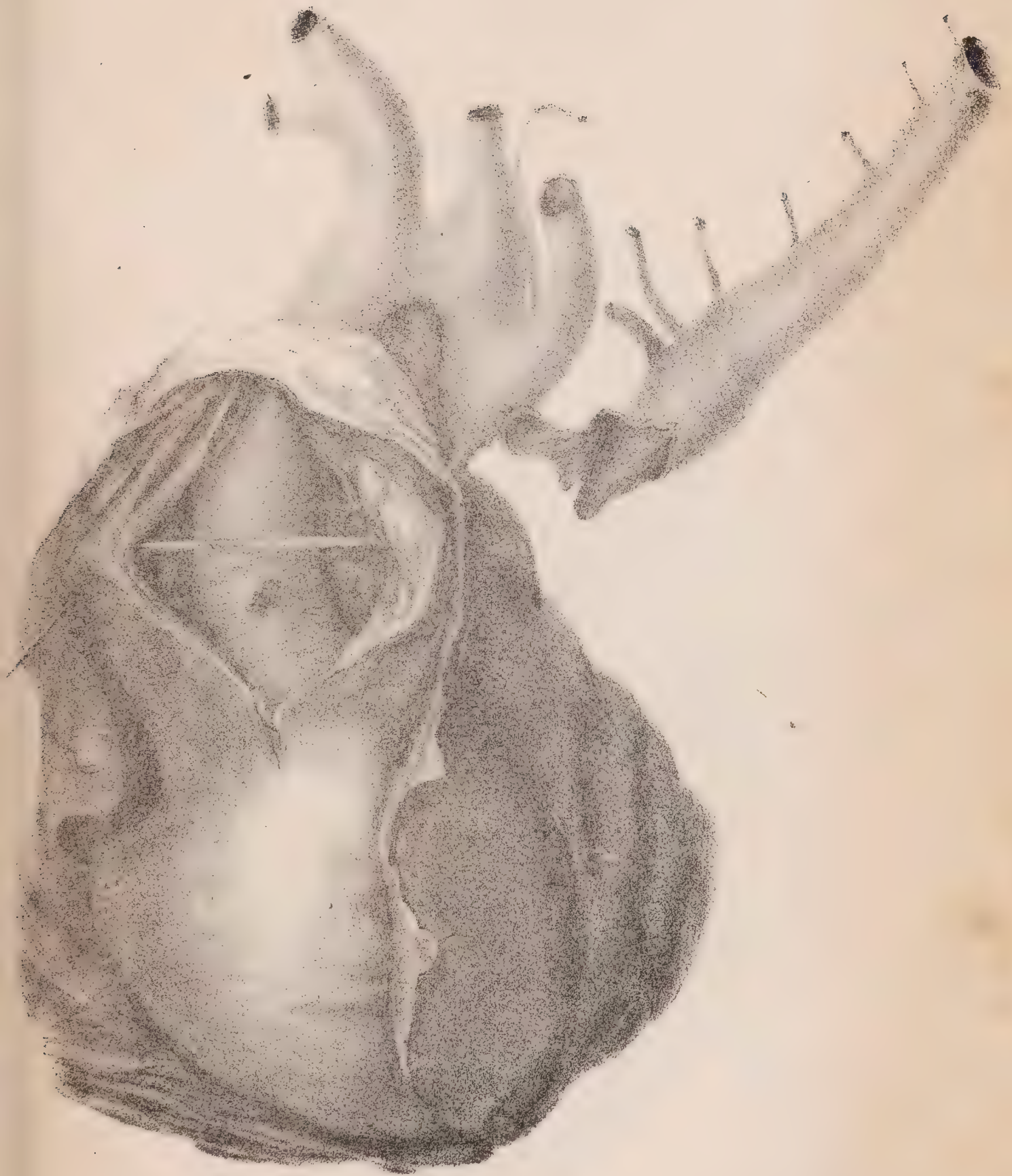
I do not wish to tire the reader with cases, but, to exemplify my description, I will briefly refer to one or two, taken from the asylum journals; and the mildness of their symptoms, although I have purposely selected instances which were fatal, will form a striking contrast with those of Mrs. Anderson the housekeeper, whose sufferings I also subjoin.

In the case of Nanny Fitton, who had only an illness of a week, and who was treated promptly with leeches, blisters and mercury, both by friction and in pills combined with opium, together with opiate injections; I observe the following notice two days before her death. “Seems no worse, pulse improved in strength, about 90, tongue clean and takes her nourishment well.” The following is the note I made of her dissection. “The arachnoid was found in many places highly vascular, and throughout the whole surface thickened and opaque, particularly about the superior sinus. The



Urtica procumbens (L.) Pers. var. *procumbens* (L.) Pers. var. *procumbens* (L.) Pers.

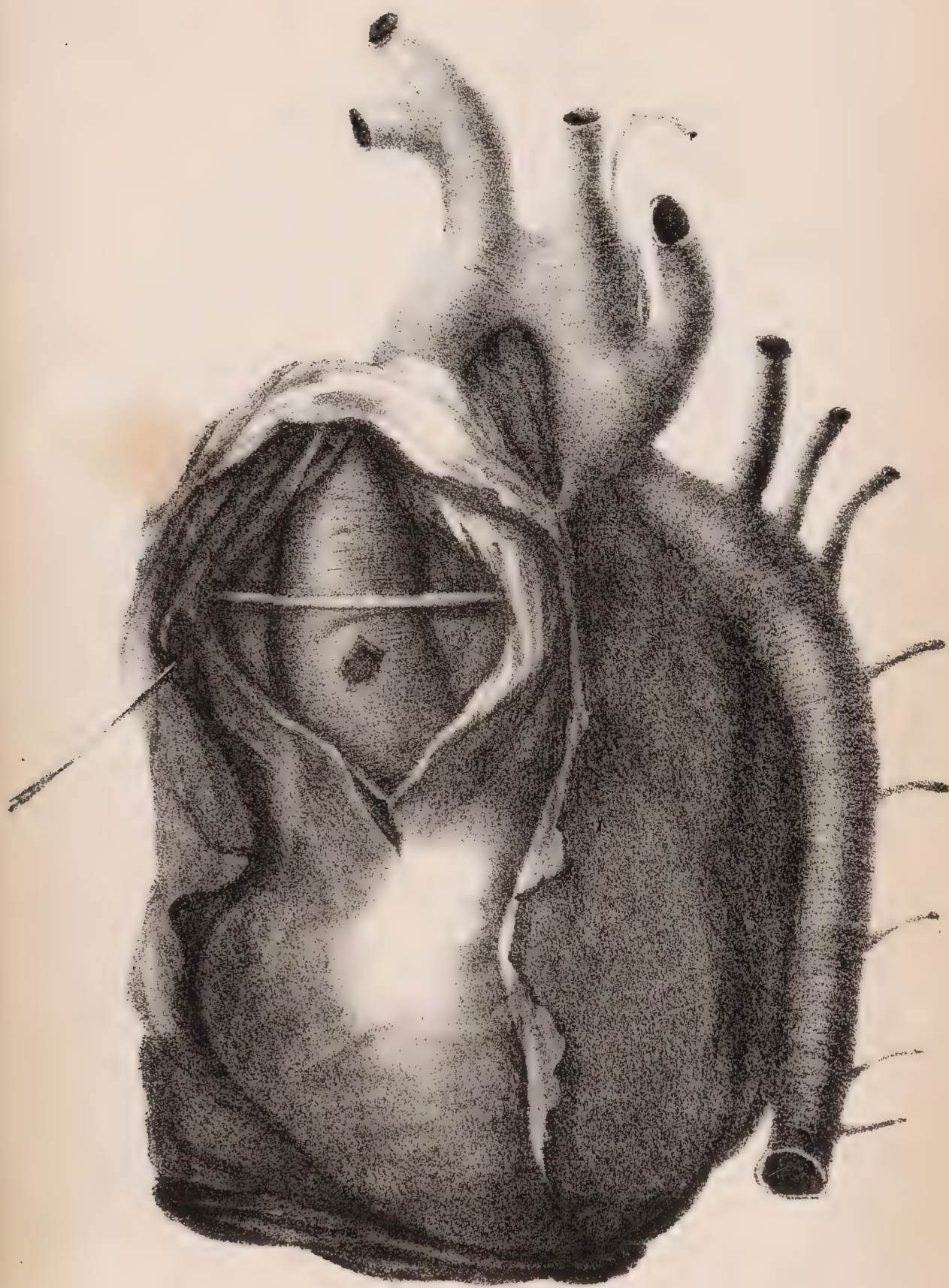
Detached by H. G. Jones, H. G. Jones, H. G. Jones



drawn by H. Adams & printed at the

establishment of J. G. P. and H. H. H.

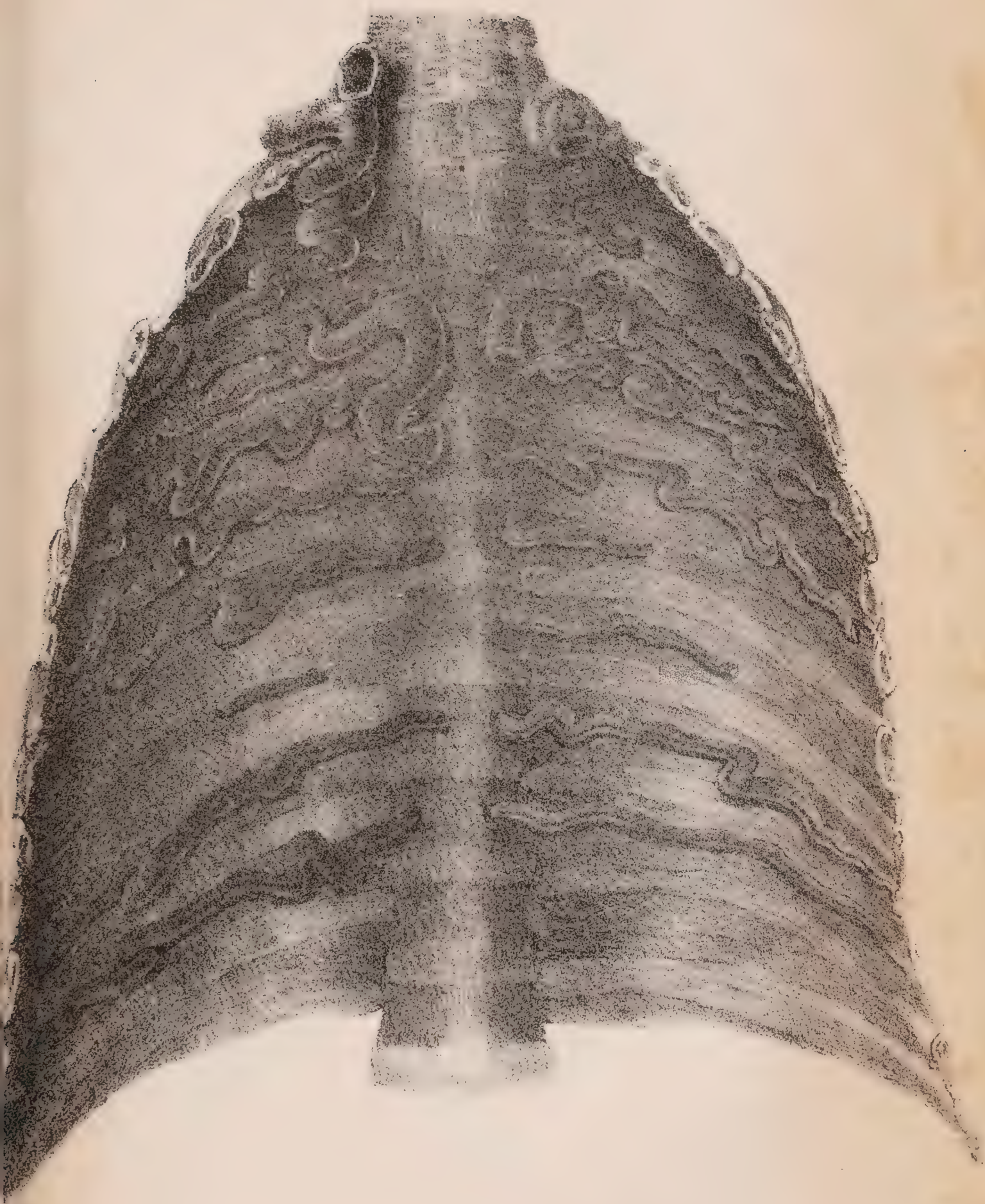
London 1794, and in the possession of Mr. Jordan Surgeon Manchester.



Engraved on stone by H.B. Jones & Printed at his

establishment 7, Little St. Martin's Lane.

From a preparation in the possession of Mr. Jordan Surgeon Manchester.



Engraved from stone by H. G. James & Co. Limited, 1885

Establishment of Rodger & Co. Ltd.

From a specimen in the possession of Mr Jordan, Surgeon, Manchester.



drawn on stone by H. G. James, & Printed at his

establishment 9, Ridge Field, Manchester.

From a preparation in the possession of W. Jordan, Surgeon, Manchester.

19th.—Stools contain abundance of fœces of a yellowish green color—little blood—pulse soft and natural—tongue moist—omit the mercury.

20th.—Stools very green, feculent and without blood.

21st.—Stools green and curdy, with very little blood—*R* Mist cretæ \mathfrak{z} viii. Confect. opiat: \mathfrak{z} ii. Tinct: catechu \mathfrak{z} ss \mathfrak{z} i. 4 ta q. q. h.

22nd.—Contr mist—*R* cupri sulph gr. vi. Opii gr vi. in pil vi. dividend: Sumat i. bis in die—sago with two glasses of wine.

23rd.—Stools bloody and more slimy—pulse slow and soft—skin cool. He utters no complaint, and gives no answer of any kind. Contr. mist: et pil: cupri ter die.

27th.—Stools reported less frequent, but nearly of the same character, and bloody as before—pulse feeble. *R* cupri sulph gr. x. Opii. gr. vi. in pil vi. dividend: Sumat i. ter die. Continr. mistura.

28th.—Stools of same character as before, not very frequent, gets weaker—pulse 78. Takes no food but milk. Continr. pil et mistura. Three oz. of brandy in 24 hours—strong beef tea.

30th.—Gets weaker—will not take food—stools exhibit a considerable quantity of yellow bile and fœces. Pulse feeble—Continr mist.

31st.—Has taken nourishment very freely—appears sinking very fast—at 8 p. m. died.

DISSECTION.—Brain—Dura mater much more firmly adherent to the cranium than usual. Several ounces of fluid between the membranes. Numerous bloody points in the substance of the brain—not above the usual quantity of fluid in the ventricles. Thorax healthy.

Abdomen—All the viscera healthy with the exception of the lower part of the colon, and the rectum. The inflammation commenced at the termination of the transverse arch of the colon, where a high degree of reddening, with thickening and ulceration, existed. These appearances became more and more intense, the nearer we approached the anus.

Mrs. Anderson, aged 40, August 14th, 1828. Sent for to her at night when I found she had been much purged all day with griping and tenesmus—had been much harassed with sickness—pulse very quick and full—does not feel pain on pressing the abdomen—complains very much of violent head-ache.

August 15th.—A dozen leeches to be applied to the body, and the body and feet to be well fomented.

R Tinct opii gtts xx. ol ricini \mathfrak{z} i. enemati adjiciend statimque immittend.

15th.—Head better—bowels very painful on pressure—stools this morning quite dysenteric, and so they were I understand before the injection, but afterwards she parted with a large quantity of well digested stool unmixed with blood.

Ung. Hydrarg: femori interno fricetur \mathfrak{z} i. sextis horis.

Evening.—Found her very hot and flushed—pain in her body increased both on going to stool, and on pressure—motions very frequent every half hour, consisting of nothing but blood mixed with a whitish curdy looking substance, without the slightest fœcal smell—pulse 100 and full. V. S. ad \mathfrak{z} x. ol. ricini \mathfrak{z} ss.

Ten o'clock P. M.—Relieved by the bleeding—remained very faint and sick after—bears pressure rather better—motions still frequent, and not improved in quality. *Ol. ricini* \mathfrak{z} ss statim.

A tepid spirit lotion to be constantly applied to the body—leeches again to be applied if the pain increases. *R Pulv. opii. gr. i., Calomel gr. ii., ter die sumend.*

16th.—Has passed a very restless night—tenesmus still very urgent and stools nothing but blood and slime—half a dozen leeches were applied in the night—the vomiting is constant and most distressing. *Hirudines vi. abdomini et vi. circa anum—Contr. pil: ex calomel: et frictio mercurialis.*

17th.—Leeches have given her some relief, and the motions have not been so frequent, but they still consist of nothing but blood, and the feeling of sickness is still very tormenting—she complains of that more than any thing, and of a dreadful sense of weight under the sternum. *R Magnesiæ sulph. \mathfrak{z} ii. Tinct. lavand. gtts. xx. Inf. rosarum \mathfrak{z} i. 2 da. q. q. hora sumend.*

The subsequent report contains only a repetition of similar sufferings unrelieved by all our exertions. The sickness was almost incessant, and the same dysenteric discharge continued to the end. She sank on the sixth day. It was impossible to procure an examination of the body.

ART. X.—*A Case of obliteration of the Aorta.* By JOSEPH JORDAN Esq., Surgeon to the Lock Hospital, Manchester.

THE disease exhibited in the plates which accompany this contribution was found in the body of a man brought for dissection, and it is to be regretted, that the peculiarities of the circulation were not discovered, till some time after the subject had been in the hands of the students, hence the details of the case will not be so complete as could be desired: when, however, the discovery was made, I collected the parts together and had accurate drawings made of them.

The aorta appeared very much contracted, if not obliterated, immediately below the point to which the *ductus arteriosus* is fixed, and the very great size of the three arteries which arise from its arch, seemed to corroborate this opinion, (see plate 3) but what chiefly struck our attention was, that although the aorta was filled with injection, there was considerable movement allowed, as if there was a division between the wax at this part. To examine the state of this part internally, an incision was commenced about three lines below the constriction, and carried an inch and a half downwards; the descending aorta was then turned upwards, as is seen in plate 2, and we found that the aorta was completely obliterated, about three

lines below the union of the *ductus arteriosus*. There was a little dimple or depression in the centre of the obliterated part: the wax had formed an exact impression of it (plate 2), being of a conical form, the apex a little rounded off. An incision was now made into the aorta, above the obliteration; here also we observed a similar *cul de sac* in the centre of which was a little dimple corresponding to the one on the other side, and at this point the partition was so thin that the light readily passed through. The remnant of the opening of the *ductus arteriosus* was two lines distant from this central depression. There was in fact a remarkable similarity in the appearance of these two depressions,—viz. of the obliterated point, and of the obliterated *ductus arteriosus*. The wax formed a more rounded bulging extremity than in the one below. There was not the smallest particle of lymph or coagulum in the cavity of the aorta, either above or below the obliteration. The coats of the aorta were of their usual thickness, there was no lymph on the exterior of the aorta, nor was there any disease or effect of inflammation discernible about its obliterated part or in the neighbourhood.

Our next object of inquiry was, in what manner the circulation was carried on under these circumstances.

The origin and course of the aorta were as usual, but a remarkable peculiarity of form had taken place in its arch; there were dilatations at the origin of each of the three great arteries which arise from its convexity, and decided contractions between those dilatations. It was evident, the blood being obstructed at the point aforesaid, had been thrown into those three vessels,—viz. *arteria innominata*, the *left carotid* and *left subclavian*, which were greatly increased in diameter, particularly the subclavians, which, on comparison, exceeded the common iliacs. The carotids were not so remarkably enlarged.

The first set of vessels which the subclavian gives off were enormously increased in size, but particularly the *arteria intercostalis superior* and the internal *mammary*. The intercostalis superior on each side equalled the femoral artery in size, took its usual destination, but had become remarkably tortuous and convoluted, dividing itself into several branches, some of which passed out of the chest behind the ribs, and descended amongst the muscles of the back to inosculate with the posterior branches of the intercostal arteries of the descending aorta. But the largest branches passed in front of the ribs, and terminated, by remarkable anastomoses, with the first and second intercostal arteries of the aorta, but particularly with the first. The ribs had become deeply absorbed

and sulcated in some parts, by the pressure of the branches of this artery.

The *internal mammary* on each side was very little inferior to the *brachial* in size. They took the usual course, and terminated in five or six branches, which were continued directly into the 5th, 6th, 7th, and 8th, intercostal arteries of the aorta; these latter arteries were greatly enlarged, and had become remarkably tortuous, and in some places convoluted on themselves (see plate). There was no remarkable anastomosis between this artery and the *epigastric*, which was of its usual size through its whole course. It is to be regretted that the diaphragm having been removed, the size of the phrenic arteries could not be ascertained.

The next enlarged collateral channel was the *infra-scapular* of the *axillary* artery, or a branch arising immediately below it. This was larger than the *ulnar* artery, ran down the side of the chest, under the *latissimus dorsi*, in a very tortuous manner, and terminated in the 7th and 8th intercostal arteries of the aorta.

It was evident therefore that the chief collateral channels, by which the blood had passed from the aorta, above the obliteration, to that vessel below it, were three,—viz. the *intercostalis superior* and *internal mammary* of the *subclavian*, and the *infra-scapular* of the *axillary* arteries on each side. The blood was transmitted by these to the eight superior intercostal arteries of the *aorta descendens*:—but chiefly into the three superior from the intercostal branch of *subclavian*,—and the three inferior of the eight from the *internal mammary*, and *infra-scapular*. The two intervening intercostals, however, were of considerable size.

There did not seem to have been any want of circulation in the abdominal viscera, or lower extremities, which were apparently sound, and well nourished; as a proof of which, the limbs had been used in the lectures, for the purpose of demonstrating the muscles, and it was a frequent observation, how large and strong they were.

It is evident there must be a greater force required to propel the blood through this circuitous route, than in the usual course, and that there must have been a greater pressure in the ascending aorta and its arch; and it seems probable that this was the cause of an aneurism of the aorta within the pericardium, which on bursting produced immediate death.

The *pericardium* was found greatly distended, and, on being slit open, it proved to be by blood, partly fluid, partly coagulated, effused into its cavity. When removed it was supposed to equal about half a pound in weight. The first cir-

cumstance which struck us, was the aorta increased to twice its usual size, its surface tense, shining, and of a bluish color, through its whole course from the heart to its exit out of the *pericardium*. No orifice could be found for a long time by which the blood had escaped into the *pericardium*,—at length a small one was found at the right and posterior side (vide plates 2 and 3, a small probe is introduced into the orifice). This was so small as only to allow a common probe to enter, it had the appearance of a small fissure or crack, there was no apparent ulceration, or inflammation near it. An incision was now made along the fore part of the aorta from the heart to its exit out of the *pericardium*, this, instead of laying open the aorta, exposed a cavity containing a quantity of firm coagulated blood, of a brownish red color, adhering rather firmly to the parieties. On detaching and removing this, the aorta was seen to pass through the centre of the cavity, and of its usual size, (see plate 2 and 3) but on more accurate inspection, this proved to be the aorta deprived of its pericardial covering, consisting merely of an internal and fibrous coat, about the middle of its course an aperture was observable, which would have admitted a horse-bean. It seems probable that this was the primary mischief, that the blood had passed through this crack, and insinuated itself between the fibrous tunic and the external or pericardial covering, which in a natural state adheres very closely to it—but by this means had become separated, and dissected from it by the blood, and distended to such a degree, that it had at length given way itself, by the small opening at the posterior and right side, allowing the blood to escape into the *pericardium*.

It seems probable that this aneurism could not have been long in forming, when we take into consideration, the delicate parieties, the want of that laminated fibrous substance found in old aneurisms, and the total absence of inflammation.

We could not obtain much information on the symptoms which attended this unusual state of the circulation; the body having been raised for the purpose of dissection, we were precluded from seeking for information from his relatives. The only circumstances we could learn were, that he was 21 years of age, that he dropped down dead in the street. That he was a butcher by trade, and could lift heavy baskets of meat apparently as well as other men. He was considered to be weak in intellect, was occasionally subject to fits, and had an impediment in his speech. He was often ill and confined at home for a short time. Moreover, that he was of dissolute habits, rather fond of liquor, and had been drinking with his associates, a short time before his death.

NOTICES OF RECENT PUBLICATIONS.

ART. XI.—*The Law of Population. A Treatise in Six Books; in disproof of the Superfecundity of Human Beings, and developing the real principle of their increase.* By MICHAEL THOMAS SADLER, M. P. 2 vols. p. 639 and 690. London: John Murray, Albemarle-street. 1830.

WITH the general principles of political economy, abstractedly, we have no concern; to most of them the evidence derived from medicine and its collateral sciences has no relation; and we shall ever be the last to pollute the weapons of the profession of which we are humble members, by wielding them, as partizans, in the strife of political sophists. The law of population is however based upon physiological principles, and its investigation can be pursued by none with greater advantage, than those accustomed to the shadowy evidence and perplexing difficulties of medical inquiries. It is a question which ought not to be neglected by the physiologist, and, by the examination of which, a physician may confer important benefits on political economy—a science which contemplates the happiness of the human race. No pages can therefore be more appropriate for a notice of any new investigations concerning this subject, and especially of a provincial work, than those of a journal which is professedly open to local and general medical statistics.

Investigations of a statistical nature have received less attention from medical inquirers, than their great importance deserves. A physician does not maintain the highest elevation of character, whose observations are devoted, how microscopically soever, to symptomatology and therapeutics, if he neglect those general facts in medical science, which are derived only from an extended comparison of individual instances, and which result in the application of general principles to the constitution of society. Accustomed to the method of inquiry necessary to such investigations, and prepared by previous studies to illustrate the relation of the facts elicited, it becomes him to approach these subjects, imbued with an earnest and fearless love of truth, without reference to the existence of any of those deductions, which the eager partisans of economical contests are willing to make.

We admire, in the volumes before us, the religious feeling which is avowed, though we think their author is mistaken, in applying arguments derived from sacred principles, to the refutation of results obtained by a system of induction. Truth is never impious. A system which is consistent with the laws of nature is in harmony with all the laws of God. This method of reasoning ought to be the refuge of those who have no other weapon. Principles which are deduced from acknowledged facts by legitimate reasoning, can be assailed only by sophistry and clamour. We are happy that we have before

us an Essay, attributed to a clergyman of the Church of England, "on nature and providence to communities,"* which, in a chaste and learned English style, and, with much felicitous illustration, has for ever, by a calm but nervous argument, overthrown the objections of this nature, with which Mr. Sadler has, with a sincere but groundless alarm, assailed the theory of Mr. Malthus.

Mr. Sadler's work displays unwearied industry, and considerable research, erudition, and ingenuity. The arguments, we understand, have long been the objects of his attention, and, some of them have frequently formed the subjects of debate, in the hall of the Leeds Philosophical Society, of which the author is a distinguished ornament; but, we fear that strong prepossessions, arising, perhaps, from some excited feelings, have misled the author in his search after truth.

Mr. Sadler indeed professes himself to be guided by the Baconian system of philosophy, yet his method, on the most general inspection, is surely illogical; since he commences his argument, by asserting his conclusion. He solicits his premises, referring to future parts of his work for a deduction necessary to a preliminary argument, and adopting the result obtained by a method, which must be so unsatisfactory to the reader, he indulges in what he designates "a tautology of indignation."

The first chapter, which the author devotes to his argument, is the third of his first book: he here refers to the second book of his treatise, for a refutation of the geometrical ratio, by "*reasonings*," and by "*facts*," and treats the theory, in the mean time, as "a mere unsubstantial hypothesis." Nevertheless, though his foe lies thus twice slain before him, he cannot forego the pleasure of rivalling the egregious triumphs in the rhyme. "Mr. Malthus" he observes "has exemplified his meaning, if not, as he supposes, demonstrated its truth, by appeals to the vegetable kingdom. Let us do likewise." The example selected by Mr. Sadler is the oak, and its progress to maturity, and thence to decay is described. "It sinks, from an inevitable law of nature, analogous to that which regulates the increase of animated beings, and which hitherto has determined the fate of empires." Now the only legitimate analogy which could be obtained on this subject, from such an examination, would be, between the fecundity of animals, and that of vegetables, or the natural laws regulating the numerical increase of the individuals of a species, and not the growth, or molecular increase of the structure of a single example. The progress of an oak through the three stages of *structure* has an intimate analogy with the immaturity, the maturity, and old age of man; but none, that we can discover, with the ratio of his fecundity, or with the fall of empires.

We accept, however, Mr. Sadler's analogy (which he evidently considered legitimate) in its only applicable sense, and avail ourselves

* An Essay on Nature and Providence to Communities. London. B. Fellows. 1830.

of facts, which he applies in considering the arithmetical ratio of the increase of vegetable produce.* He, in one place observes,† every species of vegetables

“increases in ratios, which soon amount to numbers defying computation.” Again “The amount of this increase who can calculate!” “Take the pea producing annually many hundred fold, and who will encounter the calculation!”‡ Herodotus “says of wheat, in reference to Babylonia, that it never produces less than two hundred fold; in seasons which are remarkably favourable, it will rise to three hundred.”§ Wheat “throws out lateral roots, capable of producing separate stems, indicating the facility with which another principle of multiplication, transplantation, may be resorted to.”|| It was on this principle of culture that Mr. Henry “obtained from one grain of wheat about 576,840. Mr. Miller says that had he made an additional division of the plants,” &c. “the number of his plants would have been at least four fold: between two and three million fold from one grain!”

The analogy, therefore, which Mr. Sadler has chosen is *favourable* to the geometrical ratio of increase in the human species; the same reasoning might be pursued with equal or greater force with respect to animals; we give the example however, only as an evidence of the success of Mr. Sadler's arguments from analogy.

In the fourth chapter (Book I.) Mr. Sadler attempts to prove, that “the means of subsistence, whether animal or vegetable, increase in a proportion, the ratio of which is *in all cases greater*, in many almost infinitely so (as well as far more rapid) than those assigned to the principle of human increase in the theory under notice;”¶ or, in other words, *than in a geometrical ratio doubling every twenty five years*. We think that Mr. Sadler attempts to prove too much, and, moreover, that he has entirely mistaken the position of his antagonist.

The author misrepresents the theory of the increase of produce in an arithmetical ratio, when he says that Mr. Malthus “treats the subject as not referrible to space. It is the peculiar care of Mr. Malthus to shew the effect of bringing continually fresh portions of fertile land into cultivation. His theory contends that population can never increase in a more rapid ratio than the means of subsistence, but he shews, that under peculiar circumstances, the human species multiplies in a geometrical ratio doubling every twenty five years. It follows, as a necessary consequence, that the quantity of

* Conceiving it of consequence, that our readers should bear in mind the literal signification of two technical terms, frequently employed in this review, viz. the geometrical ratio of the increase of population, and the arithmetical ratio of the increase of food, we subjoin a short definition of them.* “The natural increase of population when unchecked by the difficulty of procuring the means of subsistence, or other peculiar causes, is such as to continue doubling its numbers every twenty five years.” “By the laws of nature, with respect to the powers of a limited territory, the additions which can be made, in equal periods, to the food which it produces must, after a short time, either be constantly decreasing, which is what would really take place; or, at the very most, must remain stationary, so as to increase the means of subsistence only in an arithmetical progression,” that is by the addition, at certain intervals, of the same increment of produce.

* Art. on Popul. Suppl. of Encyclop. Brit. vol. vi. p. 314.

† P. 70. vol. i. ‡ P. 73. vol. i. § P. 92. vol. i. || P. 93. vol. i. ¶ P. 103. vol. i.

food is at the same time augmented in the same proportion. As Mr. Malthus therefore has shewn in another place, that we have no reason to believe, that cultivation can increase the produce of a given quantity of land, more rapidly, than by the addition of the same increment of produce at certain intervals (or in other words, than in an *arithmetical ratio*) it follows, that when the ratio is *geometrical*, *new* lands must be employed. Moreover, as in countries where population has been pressed upon the limits of the food obtained by a general system of agriculture, waste lands are not brought into cultivation, because the labour bestowed on them would be less productive, than the same labour employed in producing another step in the arithmetical ratio of augmentation in the fertility of those lands already in cultivation, it follows, that, when the ratio of increase in the means of subsistence is sufficient for the support of a population increasing in a geometrical ratio, *new fertile* lands must be constantly subjected to cultivation, in quantities proportioned to that result.

Mr. Malthus in the article on "population," in the supplement of the *Encyclopædia Britannica* (a paper to which Mr. Sadler often refers) exhibits this principle of the fecundity of vegetation in the following terms.

"It might safely be calculated hypothetically, that, if setting out from the produce of one acre, land of sufficient quality could be prepared with sufficient rapidity, and no wheat were consumed, the rate of increase would be such as completely to cover the whole earthy substance of our globe in fourteen years."*

He explains the circumstances limiting this abundance thus.

"The main peculiarity which distinguishes man from other animals in the means of his support, is the power which he possesses of very greatly increasing these means. But this power is obviously limited by the scarcity of land, by the great natural barrenness of a very large part of the surface of the earth, and by the decreasing proportion of produce which must necessarily be obtained, from the continual additions of labour and capital applied to land already in cultivation."†

The principle of a geometrical ratio of increase by the successive addition of fresh increments of space is, therefore, not only necessarily implied in the terms of Mr. Malthus's theory, but, is enunciated as one of its collateral positions. The arithmetical ratio is asserted of "continual additions of labour and capital applied to land *already in cultivation*." Shall we say that Mr. Sadler could not understand, or, that understanding, he misrepresented the theory?

The economists assert that land produces, on cultivation, results capable of increasing in an arithmetical ratio, but (supposing for a moment, that the principle was neither implied in their propositions, nor formally announced by them, as it is) is it possible that Mr. Sadler could suppose, that they were ignorant, that if new land of equal fertility were cultivated with equal care, the means of subsistence would be increased in ratios confined only by the extent of land, and the labour, capital, and skill, employed in its cultivation? A

* Article on Population. Supplement of *Encyclopædia Britannica*, p. 307. vol. vi.

† Ibid. p. 308.

discovery so wonderful and of so mysterious a law, that it is the parallel only of that infinitely important primordial principle, that two and two make four.

Fertile lands are not generally left uncultivated in the neighbourhood of civilized nations, whose laws allow their distribution. Oceans must be navigated, deserts passed, and, when half the globe has been traversed, the emigrant cultivator must be content to suffer the privation of kindred, and society, and of the multiplied comforts and luxuries of the social constitution, to become the solitary tenant of a wilderness, submitting to toil and want, if not to the terrible visitation of unchecked disease, ere his enterprize can succeed. With such mighty obstacles, we cannot wonder that new fertile lands have been so seldom cultivated by civilized nations.

We proceed to examine the author's arguments in favour of the two propositions peculiar to himself. In the first, it is affirmed that the increase of the means of subsistence is, *in all cases, greater* than a geometrical ratio doubling the products every twenty five years, and, secondly, that in many it is *almost infinitely so, as well as far more rapid*. If this geometrical multiple, and the time of its application obtain *in all cases*, they do so in the cultivation of a given quantity of land, and, as we wish to extract no conclusion from Mr. Sadler's proposition not legitimately contained in it, we shall briefly shew that this is his opinion.

“When an adequate stimulus shall inspire and direct the corporeal and mental powers of mankind, to the raising of human food, who then shall presume to pronounce that they will not achieve those *miracles* in behalf of agriculture, which they have already done for the less important arts?”* He concludes that “superior methods of improving the fertility, and increasing the products of the earth will be discovered, and *inexhaustible store-houses* of the bounties of nature laid open to mankind, as such shall become successively necessary,”† therefore, in what ratio soever the population increase.

Mr. Sadler, in illustration, gives an example from Columella.‡ A Roman father had two daughters, to each of whom, at different times, he gave a third of his estate, and nevertheless found “*no diminution in his accustomed crop*.” We suppose each of his daughters to have been equally prolific in children surviving to the age of marriage, and that these children also continued so to the fourth descent. The estate, at the end of a century would have to be divided amongst thirty-two, and Mr. Sadler's theory supposes, that a thirty-second part of its area might, in that period, be so improved by cultivation, as to produce at its termination a quantity equal to its original “*accustomed crop*.” In twenty-five years more, the sixty-fourth, in fifty years the one hundred and twenty-eighth fraction of its original dimensions would afford an equal product. The principle is somewhat less boldly exhibited by the author as follows.

* P. 89. vol. i. † P. 90. vol i. ‡ De re rusticâ.

“The fact is, the products of the earth rise in their proportions as mankind multiply : were there no other reason, stercoration becomes so much more general in the latter case, as greatly to increase the relative produce ; the effects of which are such, that some have almost imagined, that on a perfect system it would return to the soil the elements of a future increase, amounting to as much as that from which it was derived.”

We submit, that this multiplication of produce cannot be both dependent on that of men, as it must be unless men could stercorate more than they eat, and also a necessary antecedent of their increase. There are other gross fallacies advanced in support of the same position, but it is needless further to expose these opinions ; we prefer leaving them in their own naked absurdity, and we have done this, only that we may not be conceived, according to the laudable example of certain chivalrous individuals, to have erected a man of straw on which to expend our prowess. It may be instructive to examine by what reasoning Mr. Sadler has obtained his results.

In conducting this argument, Mr. Sadler shews that animals and vegetables have, abstractedly, a power of propagating and increasing in a geometrical ratio, and some of them by very high multiples of that series. Swine in a domestic state farrow

“twice or sometimes even thrice in the year. They may have sixteen or eighteen pigs, and there have been instances of their having had twenty. Abating what you please of these numbers, still, considering the early and extreme fecundity, I ask, how many million times would a pair double, while, admitting Mr. Malthus’s own hypothesis, a human couple would do so once?”

Unfortunately for the author, the value of so seeming fair an argument is destroyed by two acknowledged facts. Animals must be fed by the produce of land, and land employed in growing corn is capable of yielding more food for the human species, than by feeding animals for the same purpose.

This first process is therefore lost in the second. “Most of these instances of prolificness” in animals “dwindle into insignificance compared with what nature unfolds” in the vegetable kingdom. We admit the fact, and, supposing for the sake of argument the multiple to be millions, we are not aware that this would support Mr. Sadler’s position that the produce of a given quantity of land increases in a geometrical ratio, for supposing the whole produce to be sown, the increase would not be necessarily greater than before, if as great ; but all increased production could be referred only to an improvement in the cultivation of the soil.

But Mr. Sadler affirms also, that the means of human subsistence increase in a proportion, *in many cases almost infinitely greater, as well as far more rapid*, than a geometrical ratio doubling every twenty-five years. We make here a great distinction between the abstract capacity of increase, and the increase itself. The means of subsistence do not increase even in an arithmetical ratio, excepting by the labour of man. Under favourable circumstances, however, by the constant addition of new fertile lands, and the accession of fresh labourers from a population increasing in a geometrical ratio, the produce of the soil may also be increased in the same, or a

somewhat more rapid series. Mr. Sadler himself says, “The amount of the means of sustentation, which are bestowed on the sole condition of labour,”* “is limited by the number, intelligence, and industry of the species,” and, he might have added, by the space and capital employed. How then can this increase be almost infinitely greater than that of the human species, when it is entirely dependent upon it?

In the second book, Mr. Sadler proceeds to examine the arguments adduced by economists, in support of the theory that population has a tendency to double every twenty-five years. Mr. Sadler does not seem to be aware, that were the occurrence of this ratio of increase proved in one example only, it would be sufficient to establish the principle, and to shew that the natural tendencies of human fecundity to rapid reproduction are in general controlled. In the second chapter, he endeavours to invalidate the facts concerning the early increase of population in some of the United States; though his arguments are so vague as to be inconclusive, they are also so shadowy as to elude our grasp. The most tangible of them is presented in this shape. Mr. Sadler attempts to shew that in those States, which were first inhabited, the population has not doubled every twenty-five years to the present time. He however, neglects to observe, that in the latter stages of that progress, this increase must have been in some measure diminished by the influence of the ordinary checks, and by the migration of inhabitants from those into other States, and their removal to distant parts of the world. The New England States are, by Mr. Sadler himself, exempted from the influence of immigration.† Their increase is therefore produced by procreation only. Notwithstanding all these circumstances, and admitting Mr. Sadler's premises, we find, on calculation, that these States, during a period of 175 years, from 1643 to 1818, have increased in a ratio doubling in little more than every twenty-nine years.‡ But, that this slight extension of the term is produced by migration and the other causes, will appear from the general increase exhibited in all the United States.

Four chapters are filled with reasoning of a similar character: four others follow, composed of extracts from authors of all grades, containing vague statements, the object of which is to produce an impression, that there has been considerable emigration to America. The chapters which next follow are ingenious. Mr. Sadler shews, from a comparison of the censuses of population in America and in other countries, that there is an excess of males in America, which he refers to the influence of immigration. His argument is stated thus:—

§“As 366,951 is to 350,487 the respective numbers of the males and females in” Wales, “so is 3,866,657 the total number of the American free white females

* P. 74, vol. i. † P. 517, 518. vol. i.

‡ The population in these States in 1643 was 21,000, and in 1820 Mr. Sadler states it at 1,424,000. Now 21,000 doubled at six successive intervals of twenty nine years from 1643 to 1818 would amount to 1,344,000.

§ P. 516. vol. i.

in 1820, to 3,693,171 their proportion of males. But 3,995,053 was the actual number, being 301,882 in excess."

Concerning the proportion which this majority bears to the whole number of emigrants he argues thus.

"It appears, by an account in the National Calendar of the United States, for the year 1821, that of the 7001 persons who had arrived in America from the 30th of September 1819, to the 30th of September 1820, 1959 only were females, and the rest 5042 males. These numbers therefore give a majority of 3083 males in the whole number 7001. If these proportions then are fair and usual," "an excess in a body of emigrants of 3083 males, implies 7001 as its total amount."*

The whole of Mr. Sadler's subsequent calculations depend, therefore, on the majority of males in a number of emigrants observed in one year only. Such an average is marvellously insufficient to establish a point of so much importance. Accepting, however, for the sake of argument, the conditions; from the excess of 301,882 males in America, above the ordinary average in Wales, he calculates, by the rule given above, a sum of 685,526 emigrants.

By examining Mr. Sadler's tables, we discover a rule by which to distribute this number. We extract the sums for the following calculation of the aggregate of emigrants of forty-five years of age and upwards, from these documents. †As 2075 Welsh females of forty-five years and upwards is to 1811 males of the same age in that principality, so is ‡462,788 American females of the same age to 403,907 males. But the number in the census is 495,065, being an excess of 91,158. Therefore, to obtain the aggregate of emigrants of which this male majority was a part; as 3083 is to 7001 so is 91,158 to 207,005. Deducting 207,005 the number of emigrants of forty-five years of age and upwards, from 685,526 the whole number according to Mr. Sadler, we procure 478,521 the amount to be attributed to all the other ages. A great proportion of this mass of emigrants may therefore be justly attributed to a period thirty-five years antecedent to the date of this census, when all who entered the United States at the age of sixteen would have become, at this latter period, fifty-one years of age. Mr. Malthus, however, informs us that "our official accounts of the number of emigrants to the United States from England, Ireland, and Scotland during the ten years from 1812 to 1821 inclusive, give an average of less than 7000 although the period includes the extraordinary years 1817 and 1818, in which the emigrations to the United States were much greater than they were ever known before or since. The official American accounts, as far as they go, confirm this average, and allowing fully for the emigrants from other European countries, the general average will still be under" "ten thousand."§

By an ingenious method of calculation, to which it may be unnecessary to advert, Mr. Malthus estimates the annual amount of emigration at 7,165 from 1800 to 1810, and at 10,660 from 1810 to 1820.

"Altogether then, we can hardly err in defect, if we allow 10,000 a year for the average increase from emigration, during the twenty-five years from 1795 to 1820."||

¶ "The white population of 1790 was 3,164,148. This population, according to

* P. 523, vol. i. † P. 536, vol. i. ‡ P. 302, vol. ii.

§ Article on Population. Supplement to the Encyclopædia Britannica. vol. vi. p. 309. Attributed to Mr. Malthus.

|| Ibid. p. 310, vol. vi. ¶ Ibid. p. 310. vol. vi.

the rate at which it was increasing, would have amounted to about 3,694,100 in 1795, and, supposing it to have just doubled itself in the twenty-five years, from 1795 to 1820 the population in 1820 would have been 7,388,200. But the actual white population of 1820 appears, by the late census, to be 7,861,710 shewing an excess of 473,510, whereas an emigration of 10,000 persons annually, with the increase from them at three per cent., a rate which would double a population in less than twenty-four years, would only amount to 364,592."

Supposing, however, that we accept Mr. Sadler's terms, absurd though they be, 685,526, the aggregate of emigrants for which he contends, distributed through 35 years, would give 19,586 per annum, and with the increase from them at three per cent. per annum, a rate which would double a population in less than 24 years, would amount to about 665,890. Now, subtracting from this sum the excess shewn to exist in 1820 (above the increase upon a geometrical ratio, doubling every 25 years) of 473,510 we obtain a remaining sum of 192,380 of the accumulated population unaccounted for. The population in 1820, on the ordinary ratio of increase, would have been 7,388,200; the twenty-fifth part of this, or the increase which would ensue in one year, supposing this ratio to continue progressively, is 295,528. All that Mr. Sadler obtains, therefore, *by his own very disputable premises*, is to extend the ratio of doubling *less than one year*.

"Such an increase from them, however, would not take place. It appears, from an account in the National Calendar of the United States, for the year 1821, that, of the 7001 persons who had arrived in America, from the 30th of Sept. 1819, to the 30th of Sept. 1820, 1959 only were females, and the rest, 5042, males—a proportion which, if it approaches towards representing the average, must very greatly reduce the number, from which any increase ought to be calculated."*

We may add especially as it appears from the census, that the number of American females, at the ordinary ages of marriage, is not greater than that of the males. Mr. Sadler pronounces this to be of all mistakes, "the most ludicrous as well as erroneous."† He says, "this great majority of males implies of necessity, unmarried males." "Now instead of these not causing, according to their numbers, an increase equal to others of the like age, in their adopted country, they *in fact do so in a two-fold degree*. Nothing can gainsay this conclusion, unless it could be proved, that American females refuse to ally themselves with European males, or, secondly, that there is a paucity in the former at the nubile age in America. A fact which the census contradicts."‡

The "nubile age" in America, may on the average, be considered about 18. Mr. Sadler, page 50, vol. ii., calls it 23, which would be much in favour of our argument. According to the census, the proportionate numbers of males and females calculated on a radix of 20,000 are, at the age of 19, as 212 males to 214 females; at the age of 20, as 204 males to 206 females: at 21, as 195 males to 197 females: at 22, as 186 males to 187 females: at 23, as 176 males to 177 females: at 24, as 165 males to 167 females: at 25, as 154 males to 157 females: or the sexes are nearly balanced at these ages. From 26 to 45 their proportion is as 1954 males is to

* Article on Population. Supplement of the Encyclopædia Britannica, p. 319, vol. vi.

† P. 563. vol. i. ‡ P. 566.

1874 females; shewing a great majority of males. We repeat therefore, that supposing the whole excess of males, contended from one example to occur amongst the emigrants do exist, and even, granting that they are all of age and disposed to marry, (which is not proved) the increase from this source, which we have for the sake of argument allowed, could not take place. In conclusion, we observe, that not only the registers of emigrants from the United Kingdom, but also the records of the persons who enter the United States at the principal ports are such, as irrefragably to demonstrate that the ratio of immigration is not greater than 10,000 a year.*

These criticisms upon Mr. Sadler's examination of the theory of Mr. Malthus might be much extended—we might, for instance, shew that the tables in the commencement of the second book, which are supposed by the author to demonstrate the impossibility of this hypothesis, are deduced from inaccurate premises; and, as an example, the average age of marriage in American females is stated to be twenty three, when Mr. Sadler in another part of the work, allows they frequently marry at sixteen, and always early. We hasten however to examine cursorily the physiological principles adopted in support of his peculiar hypothesis.

Mr. Sadler devotes a chapter† to a consideration “*of the effect of*

* We think it important to exhibit the fallaciousness of one argument which Mr. Sadler adduces, before we leave this subject. Pursuing the inquiry which we have examined above, Mr. Sadler says, “But if these appeals to the census of Great Britain should be objected to on various grounds, the same facts”—(*viz. that the majority of males is to be attributed to emigration*) “may be still proved by the evidence of even American statistics. The state of New Hampshire, for instance, may be well instanced, as one of the most flourishing in New England; and instead of its being recorded as a migratory one,” (*when males would go away*) (“the only objection to its being considered as affording decisive evidence in the present inquiry) I find that the increase which it exhibits is stated to be partly owing to emigration from the neighbouring States, and from different parts of Europe,” (*when males would be introduced*). “It may be fairly inferred, therefore, that if the natural distribution of the population be materially disturbed, it will be in a way prejudicial, instead of favourable to my argument” (*from containing a greater number of males than the census of Wales exhibits.*) “In New Hampshire then, there were, in 1820, 22,703 females between the ages of 16 and 26, and 24,806 males. As therefore 24,806,” (*a greater quantity of males*) “is to 22,703” (*a smaller quantity of females*) “so is 781,371” (*a greater number of females of that age, in the census of the United States*) “to 715,128” (*a smaller quantity of males*) “the natural proportion of males in that division of the United States, according to New Hampshire statistics.” (Mr. Sadler wishes to ascertain the number of males in the general American census, which, according to the proportion in the census of New Hampshire, ought to correspond with an ascertained number of females in the census of the United States; therefore the rule to obtain this result should be stated thus; as 22,703 females N. H. is to 24,806 males N. H. so is 781,371 American females, to 853,750 males; but the number is 776,150, therefore the proportion is 77,600 more, instead of being 61,002 less.) “Which number,” however, Mr. Sadler continues, “falls short of the existing number of males, by 61,002 individuals, being the amount, according to this calculation, of the majority of males in the whole number of emigrants, which have been added to that division of the census.”—P. 515, vol. 1.

† Article on Population. Encyclopædia Britannica, p. 317, vol. vi.

the preventive check, or the postponement of marriages, on their prolificness." The author misrepresents the economists when he construes "moral restraint" as a "postponement" of marriage only. "Moral restraint," says Mr. Malthus,* "in application to the present subject, may be defined to be *abstinence from marriage for a time or permanently*, from prudential considerations, with a strictly moral conduct towards the sex in the interval." Yet Mr. Sadler understands the phrase as meaning only a "postponement" of marriage. Mis-stating this principle, Mr. Sadler attempts to shew, that the postponement of marriage, to any period within the limit of fertility in females, does not diminish its prolificness. The ordinary age of the marriage of females in England, according to Mr. Sadler, is twenty one; the preventive check, can therefore, only be supposed, even according to Mr. Sadler's definition of it, to operate after that age, and many marriages occurring within a few years of this period, cannot be said to be greatly affected by the preventive check. "When the preventive check," Mr. S. continues, "has postponed marriage, so as to render the degree of prolificness more difficult," "first, the term of female prolificness is lengthened, or second, the intensity of the prolificness, during what remains of its customary duration, is increased." These laws apply therefore to periods commencing sooner or later after the age of twenty one. We learn beneath, specifically, what Mr. Sadler means by postponement, and to how advanced an age he applies these laws, for he gives the following quotation from Mason Good, in support of his first proposition; "when women *marry late in life*, the postponement of the generative energies will carry the period of prolificness beyond the fiftieth year."

Continuing his argument in support of these doctrines, Mr. Sadler gives the following table, the observations contained in which, were communicated to him by Dr. Granville.

"The facts exhibited in it," he says, "clearly evince, that the annual fecundity of marriages regularly increases, *in proportion as the period at which they are contracted is postponed*, provided of course that period is within the limits" of female fertility.

Ages when married.	Average No. of births for each year of marriage.*	Ages when married.	Average No. of births for each year of marriage.
13 to 16	.456706	25 to 28	.545163
16 to 20	.503610	29 to 32	.589811
21 to 24	.520227	33 to 36	.776866
		37 to 39	1.125000

The average exhibited in this table must, however, *cæteris paribus*, necessarily be in favour of the women married latest, since it is calculated upon a comparison of the births, with the years of marriage. For a woman married at twenty-three who was questioned at the age of thirty-nine, supposing she had borne sixteen children, half of which she had produced at the rate of one in ten months, would still represent only the average of one in each year, and, if she had

* Great obscurity is involved in the heading of this column and of the fourth in the next table. We suppose, however, that the number of children is compared, with the years which have elapsed, since the marriage was contracted.

borne eight children, would represent half that average. Whereas a woman married at thirty seven might, in twenty months, have two children, and represent the same average though she never had any more. This table cannot prove that the intensity of fecundity is greater in those marrying late. We find in the next page, therefore, another table, arranged from the same marriages and births, but modified for the purpose of shewing the effect of the postponement of marriage on the mortality of the offspring.

Ages when married.	Number of marriages,	Number of living births.	Children alive at existing pregnancy.	Deaths of children.	Proportion of mortality to births.	Births to each marriage.	Surviving offspring of each marriage.
13 to 16	74	376	209	167	.444149	$4\frac{8}{7}\frac{0}{4}$	$2\frac{6}{7}\frac{5}{4}$
17 to 20	354	1307	751	556	.425401	$3\frac{3}{3}\frac{4}{5}\frac{3}{4}$	$2\frac{4}{3}\frac{3}{5}\frac{3}{4}$
21 to 24	283	823	474	349	.424058	$2\frac{2}{2}\frac{5}{8}\frac{7}{3}$	$1\frac{1}{2}\frac{9}{8}\frac{1}{3}$
25 to 28	110	287	170	117	.407665	$2\frac{6}{1}\frac{7}{1}\frac{0}{0}$	$1\frac{6}{1}\frac{0}{1}\frac{0}{0}$
29 to 32	38	67	46	31	.313432	$1\frac{2}{3}\frac{9}{8}$	$\frac{4}{3}\frac{6}{8}$

We have added two columns to this table to shew that the number of births to each of the same marriages as those compared in the former table, and the number of surviving births are greater in proportion to the earlier date of the union. The greater "*average of births for each year*" of the later marriages is, it must be presumed, to be attributed only to the shorter period which had elapsed, since such unions were contracted. If the proportionate mortality be greater in the earlier marriages, the difference is so small, that it must be attributed to the longer period which had elapsed, from the births to the time when the inquiries were instituted. Were this allowance made, the average mortality would, as exhibited in this table, be less in the children of early marriages, though we do not advocate this law as usually prevailing in marriages contracted so prematurely as many which it displays.

Mr. Sadler, anticipating that these data would be invalidated, gives another table, "shewing," he says, "the effect of the *postponement* of the marriages of the peeresses, on both their prolificness and the preservation of their offspring." We beg our readers to keep in mind, that the ordinary nubile age of England, according to our author is twenty one, and, that therefore its "*postponement*" must occur after that period; and also that Mr. Sadler has given us to understand, that his laws affect "*a late period of life.*" These remarks premised, we subjoin the table which is given to prove that "not only are marriages *more prolific the longer they are deferred*, but, the deaths in their offspring less numerous.

Period of marriage.	No. of marriages.	No. of children.	Deaths of children before the nubile age.	Births to each marriage.	Proportion of mortality to a birth.	Permanent increase.
12 to 15	32	141	40	4.40	.283	3.15
16 to 19	172	797	166	4.63	.288	3.66
20 to 23	198	1033	195	5.21	.188	4.23
24 to 27	86	467	180	5.43	.171	4.50

The average prolificness of marriages contracted from *twelve* to the *mature* age of *twenty-seven*, and the comparative mortality of their offspring are here adduced to prove, that the *postponement* of marriage beyond the ordinary nubile age of *twenty-one* increases the prolificness of females, and diminishes the mortality of their offspring. For this purpose, such a comparison is *quite inconclusive*. In the ages before twenty-one, the table illustrates the principle, that a smaller ratio of prolificness attends marriages prematurely contracted, and a greater mortality occurs in their offspring. Mr. Sadler, in another table, has given us facts, concerning the same marriages, from which it may be shewn, that *the prolificness declines* in the ages which follow that period.

Ages of the peeresses at marriage.	No. of marriages.	No. of children.	Deaths of children before the nubile age.	Births to each Marriage.	Survivors of each Marriage.	Deaths to each Birth, as one to
21	58	324	63	$5\frac{3}{5}\frac{4}{8}$	$4\frac{2}{5}\frac{9}{8}$	$5\frac{9}{6}\frac{3}{3}$
22	50	265	51	$5\frac{1}{3}\frac{5}{0}$	$4\frac{1}{5}\frac{4}{0}$	$5\frac{1}{1}\frac{0}{8}$
23	42	199	28	$4\frac{3}{4}\frac{1}{2}$	$4\frac{3}{4}\frac{3}{2}$	$7\frac{3}{2}\frac{8}{8}$
24	34	226	44	$6\frac{2}{3}\frac{2}{4}$	$5\frac{1}{3}\frac{2}{4}$	$5\frac{6}{4}\frac{4}{4}$
25	24	96	12	4	$3\frac{1}{2}$	8
26	14	56	6	4	$3\frac{8}{1}\frac{4}{4}$	$9\frac{1}{3}$
27	18	87	18	$4\frac{1}{3}\frac{5}{0}$	$3\frac{1}{1}\frac{5}{8}$	$4\frac{1}{1}\frac{5}{8}$

These data are therefore, as far as they go, unfavourable to the opinion, that the postponement of marriage beyond the ordinary nubile age is favourable to the fecundity of females, yet Mr. Sadler supports the principle in the extreme position, that marriages are "*more prolific the longer they are deferred.*" They are given also by Mr. Sadler, for the purpose of proving, that "*moral restraint,*" defined by Mr. Malthus "*abstinence from marriage for a time or permanently,*" neither retards the numerical progress, nor diminishes the aggregate of the population, but has rather a contrary tendency. It is unfortunate for Mr. Sadler, that had these facts been opposed to the only conclusions which can be drawn from them, the data would have been insufficient to establish his principle, and that, also, the very imperfect series of facts which he has adduced in its favour are, as far as they go, hostile to the conclusions he has drawn from them, both as regards the prolificness of marriages which are postponed, and the operation of the preventive check. Our readers will decide, on more extended experience than any exhibited here, whether the postponement of marriage beyond the age of twenty-one lengthens the period of fecundity, increases its intensity, and diminishes the mortality of the offspring, and whether these principles are more efficient the longer this period is deferred.

In the third chapter of the fourth book Mr. Sadler announces an ingenious theory respecting the proportion of the sexes. The law he proposes is, that, "*on the average, among the total of the births, the sex of that parent shall exceed in number, whose age exceeds, and further, that excess shall conform to the mortality which would take place in a period, equal in duration to the interval*

between the ages of the parents." We have no space to examine the facts which Mr. Sadler adduces in favour of this hypothesis. The subject is worthy of that investigation, to which, we know it will soon be subjected; in the meantime we are of opinion, that Mr. Sadler's premises are insufficient to support his conclusion, and we have, in our own experience, numerous examples directly opposed to his law.

We hasten to examine the principle which Mr. Sadler announces, as his "*law of population*." "The *prolificness** of human beings, otherwise similarly circumstanced, varies *inversely as their numbers*." This law is said to be "influenced by the *quality* of"† the space they occupy "or otherwise by its potential produce." "It is greater where the mortality is greater, and on the contrary, smaller where the mortality is less."‡

Mr. Sadler thus attributes the rapid increase in the population of New South Wales, to "the *astonishing fecundity of marriages*," although no registers of marriages or births are adduced in proof. The proportion of births to females at the Cape of Good Hope is 10.9 to 1, or about 21.8 of both sexes to 1. This, Mr. Sadler attributes to the *prolificness* of the females.

"The proportion of births to the population," says Mr. Malthus, "appears to vary in different countries, and under different circumstances, from about 1 in 17, to 1 in 49."§ Mr. Malthus was therefore aware of similar facts, but attributed the difference in the ratio, to the comparative rate at which the population was increasing from early and general marriages, and because abundance prevented excessive mortality in children. Similar arguments pervade the sixth chapter, and, the conclusions being collected in a table, Mr. Sadler confesses that he is fully aware "of the great uncertainty, and comparative incorrectness of which it may not be unreasonably suspected." The proportion of births to the number of females cannot, as the author supposes, give an accurate estimate of their relative prolificness, excepting in cases when they are all married, and none are married twice.

The chief evidence which Mr. Sadler adduces in favour of his theory is derived from the registers of *marriages and births* in England. He divides the counties according to the density of the population on each square mile, and endeavours to prove that the prolificness of females in the various districts varies according to the density of the surrounding population. The best example of this egregious law is Lancashire. "Taking a tolerably large sized map, and reducing" its six hundreds "into regular mathematical figures, I calculated," says Mr. Sadler, "by planimetry, as accurately as I could, their respective areas in square miles, and according to their relative contents, I divided the known contents of the entire county." From the registers of births, and this distribution of the population, Mr.

* P. 352, vol. ii. † P. 353. ‡ P. 354.

§ Article on Population, P. 323. Encyclopædia Britannica Suppl. vol. vi.

Sadler forms the conclusion, that in Lonsdale, which contains 96 inhabitants on each square mile, the births to each marriage are 4.42 :—in Almondness, containing 267 inhabitants on each square mile, they are 4.15 :—in Leyland, containing 354 in the same space, they are 3.91 :—in West Derby, containing 409 inhabitants in the square mile, they are 3.57 :—in Blackburn, containing 512, they are 2.91 :—and in Salford, containing a population of 869 in each square mile, the births to each marriage are only 2.86.

It is, however, universally known that the registers of births in England are exceedingly defective. Dissenters are not baptised in the established churches of worship, and public registers are seldom or never kept of their baptisms. This has introduced a laxity which has pervaded the whole system of registry, and, especially in the neighbourhoods where these circumstances prevail in the greatest degree. The dissenters are comparatively most numerous in the most populous districts, and particularly in large towns. In agricultural neighbourhoods which are thinly peopled, few dissenters exist, and the salutary jurisdiction of the established church gathers the whole population beneath her protection, and exerts an influence which preserves the registers of baptism tolerably correct. Thus we are able, from general personal knowledge, to assert that in the six hundreds of Lancashire, the number of dissenters is comparatively very much greater in proportion to the density of the population. In towns, from many other causes, the system becomes still more defective, a considerable proportion of the population is not registered. A table, therefore, formed on the relative proportion of births and marriages in England, can indicate only where the system is *least perfect*, or *where most dissenters exist*.

In proof of this, it might perhaps be sufficient to exhibit the monstrous fallacies into which this mode of calculation has led the author. For example, in towns, it is stated, (Chap. XIV.) that the comparative prolificness of the females depends on the number of the inhabitants. The largest towns being therefore the least prolific. In Wareham, containing 1820 inhabitants, the births to each marriage are 4.67—but, ye ladies of Plymouth, Leeds, Bristol, and Birmingham, ye are cursed with a sterile average of 2.40! Ye merchants of Liverpool, manufacturers of Manchester, and citizens of London, the fecundity of your wives is limited to 2.34 offspring! “Concerning Manchester,” that ill-fated city of steam and smoke, chimnies and churches, rail-roads and riots, “concerning Manchester,” writes our author,

“I find in Dr. Short's collections, that from 1731 to 1752, the population of the town being under 9000, the fecundity of marriages was 4.37 children each; in 1755 it was 2.44 only; in 1790—1800 (the population at the latter date having increased to 84,000) it had fallen to 2; and in the last term, the inhabitants having increased to above half as many again, it sunk as low as 1.72.”!

The progress of Liverpool towards impotence is described in the next sentence, and the average number of births to each marriage is at present described to be 2.97, and, so on, of Birmingham, Bristol, Leeds, &c. We suggest an interesting physiological inquiry to our

author, what would be the prolificness of a matron transported from Manchester, to a neighbourhood where the population was 20 on the square mile? And what effect have the annual migrations of ladies to watering places on their fecundity, as arising *only* from the change from a dense population to a comparatively uninhabited region?

In order however to remove all doubts upon this subject, we have taken the table of the counties, as Mr. Sadler has arranged it, according to the number of inhabitants on the square mile, as ascertained by the census of 1821.* This table is given for the purpose of shewing, that the prolificness of the females decreases as the density of the population increases. We have added, opposite to each county, the number of churches and dissenting congregations contained in it. We have obtained these details from an elaborate statistical paper contained in the supplement of the Congregational Magazine for December, 1829. We premise, that though we cannot vouch that these statistical estimates are accurate, we are persuaded that they are as much so as minute investigation, and scrupulous fidelity could make them. The number of churches has, also, from late acts of parliament, increased in a greater ratio than the congregations which frequent them; the dissenting chapels are only built for the accommodation of congregations already collected, or desirous of being united, the whole number of dissenting chapels will therefore represent a comparatively greater number of dissenters, than the established churches of episcopalians. The third, fourth, and fifth columns are extracted from Mr. Sadler's table.

* In Ireland, to determine the comparative prolificness of the various counties, Mr. Sadler applies the following rule.

*"Other circumstances being the same, the variations in the proportion of children under a certain age (say ten years in order to assimilate the proof, as far as may be, with that which will be founded on the American censuses) compared with the prolific adults, those for instance from the ages of fifteen to forty-five inclusive, will indicate the prolificness of marriages, in the several counties throughout the island."**

This is not a legitimate method, unless *"all other circumstances be the same,"* and Mr. Sadler neglects to shew that an *equal relative proportion of prolific adults are married in each county*. He applies the same law to America, and his conclusions represent, therefore, only *the relative increase of the whole population of different districts, not the comparative fecundity of the females*.

Counties arranged according to Mr. SADLER's table.	Number of established Churches.	Number of Dissenting Congregations.	Amount of births to every hundred marriages in Mr. Sadler's table.	Amount of ditto when the unen- tered are added in Mr. Sadler's table.	Population on each Square Mile.
Westmorland . . .	68	41	420	427	68
Lincolnshire . . .	598	304	. .	. .	105
Cumberland . . .	139	105	. .	. .	107
Northumberland . .	97	136	. .	. .	108
Hereford . . .	201	49	. .	. .	122
Rutland . . .	40	13	. .	. .	127
Huntingdon . . .	74	36	. .	. .	134
Cambridge . . .	162	85	. .	. .	145
Monmouth . . .	118	72	. .	. .	145
Dorsetshire . . .	248	88	. .	. .	146
	1677	888	396	414	
Shropshire . . .	209	102	. .	. .	156
Sussex . . .	300	87	. .	. .	162
Northampton . . .	303	153	. .	. .	163
Wilts . . .	274	129	. .	. .	164
Norfolk . . .	683	181	. .	. .	168
Devon . . .	442	247	. .	. .	173
Hampshire . . .	258	128	. .	. .	177
Berks . . .	150	81	. .	. .	178
Suffolk . . .	486	132	. .	. .	182
Bedford . . .	115	71	. .	. .	184
Buckingham . . .	190	121	. .	. .	185
Oxford . . .	203	99	. .	. .	186
Essex . . .	413	175	. .	. .	193
Cornwall . . .	187	320	. .	. .	198
Durham . . .	91	177	. .	. .	199
	4304	2203	390	406	
Derby . . .	161	182	. .	. .	212
Somerset . . .	459	254	. .	. .	220
Leicester . . .	208	144	. .	. .	221
Nottingham . . .	178	152	. .	. .	228
	1006	732	388	402	
Hertford . . .	129	62	. .	. .	251
Worcester . . .	175	104	. .	. .	258
Chester . . .	145	153	. .	. .	262
Gloucester . . .	290	177	. .	. .	272
Kent . . .	395	210	. .	. .	282
	1134	706	378	392	
Stafford . . .	178	213	. .	. .	303
York . . .	809	1019	. .	. .	309
Warwick . . .	209	108	. .	. .	310
	1196	1340	353	375	
Surrey . . .	142	101	. .	. .	536
Lancaster . . .	287	504	. .	. .	585
Middlesex . . .	233	289	. .	. .	4140
	662	894	331	332	

In the least populous counties the churches are therefore nearly twice as numerous as the dissenting places of worship, whereas, in the most populous counties, the dissenting chapels are more numerous than the episcopalian churches. This change is coincident with the diminished proportion of baptisms registered, and is, we think, its cause, and consequently the reason, also, of the apparently diminished prolificness of the females.

We have not space to exhibit, in the detail of their minute individual features, the erroneous data, and fallacious conclusions which are accumulated on this subject. The statistical registers of few countries are preserved with that minute accuracy, and systematic intelligence, which alone can be sufficient for the demonstration of the principle in question. If the law, that the prolificness of human beings is inversely as their numbers, be contradicted by the statistics of one country, it is overthrown. The statistical registers of the Netherlands are perhaps better preserved than those of any other kingdom. For the purpose of demonstrating the fallacy of this supposed law we have, therefore, selected this kingdom. We have first arranged a table of the provinces, according to an increasing ratio of inhabitants in one hundred Hectares of land, ranging from twenty-three inhabitants to one hundred Hectares, through various numbers, to 228 inhabitants in the same space.

TABLE—shewing that the ratio of births to each marriage bears no proportion to the density of the population.

Provinces.	Area in Hectares.	Population.	Population in 100 Hectares.	Births to each Marriage.
Drenthe	223,852	52,383	23	4.69
Luxembourg	626,343	287,786	45	5.37
Overysse	329,961	158,399	48	4.60
Namur	345,610	187,411	54	5.06
Gueldres	509,195	285,575	56	4.75
N. Brabant	484,896	321,917	66	5.14
Limbourg	455,316	317,387	69	3.09
Groninguen	205,059	153,860	75	5.47
Friseland	260,732	199,335	76	5.75
Zealand	158,036	127,659	80	5.49
Utretcht	127,617	115,642	90	4.86
Antwerp	282,293	318,893	112	4.65
Liege	282,593	327,161	115	5.33
Hainhault	377,390	538,050	142	4.98
S. Brabant	307,733	489,602	159	5.45
S. Holland	227,830	432,054	159	4.74
N. Holland	229,200	388,425	165	4.50
W. Flanders	317,422	557,871	175	5.01
E. Flanders	298,370	681,489	228	5.82

The above table needs no explanation, a simple inspection will be sufficient to shew, that the ratio of births to each marriage in the several provinces, bears no proportion to the number of the inhabitants in every hundred hectares.

Mr. Sadler has however claimed this country, as affording an illustration of his theory. "These censuses," he says,

"will, on due examination, be found merely to concentrate those modifications of it, which, as previously shewn, resolve themselves into the general rule." One of these is, "that the ratio of human *fecundity* has a direct relation to that of the *mortality* which prevails in any particular district or country." "The country now under consideration," speaking of the Netherlands, "is remarkable for exhibiting a *variation in the ratio of mortality* in its various provinces, perhaps wholly unequalled elsewhere, the extremes being as wide as from 1 death in 31 of the inhabitants, to 1 in about 58; *which variation*, as has been already mentioned, one of the ablest of its statistical authorities has observed, is *coincident with that of the prolificness of the same provinces*."

Mr. Sadler here refers to Mr. Quetelet who has published a most valuable series of statistical researches on the Pays Bas. From the documents to which Mr. Sadler alludes, we have therefore arranged the following table, according to a *diminishing* average of deaths,* in the various provinces.

Provinces.	Rate of Increase of population for 5 years,—to 1825.	Deaths one in	Births one in	Marriages one in	Ratio of Births to Marriages in 1824.
Zealand	0.056	31.4	20.7	113.7	5.49
N. Holland	0.040	34.5	23.2	104.4	4.50
S. Holland	0.070	35.0	23.9	113.3	4.74
Utretcht	0.068	36.3	24.3	118.2	4.86
S. Brabant	0.068	38.2	26.1	142.2	5.45
W. Flanders	0.073	40.7	27.5	137.7	5.01
AVERAGE	0.062	36.	24.2	121.6	5.
Overyssel	0.071	43.5	26.5	121.9	4.60
E. Flanders	0.051	44.8	28.4	165.3	5.82
Friseland	0.086	46.1	27.1	128.7	5.75
Liege	0.065	46.2	28.9	154.1	5.33
Limbourg	0.053	47.5	29.2	90.3	3.09
Antwerp	0.056	48.8	30.7	142.9	4.65
AVERAGE	0.063	46.1	28.4	133.8	4.87
Groninguen	0.078	49.3	28.9	149.3	5.17
Hainault	0.073	51.1	27.4	136.5	4.98
N. Brabant	0.059	51.4	29.2	150.0	5.14
Gueldres	0.069	53.7	27.6	131.1	4.75
Luxembourg	0.080	53.8	27.9	149.9	5.37
Drenthe	0.087	55.0	27.8	130.3	4.69
AVERAGE	0.074	52.3	28.1	141.1	5.1
Namur	0.062	57.9	29.8	150.9	5.06

The above table demonstrates, that, as the ratio of deaths increases, that of marriages, and consequently of births is augmented,

* We discover, to our surprise, that Mr. Sadler [page 523 vol. ii.] has arranged a table from the same facts, by which, he conceives that the contrary is proved. We do not see any reason why Namur should have been omitted in the author's table, excepting, that it was opposed to his hypothesis. As the marriages are supposed to succeed the deaths, the table should have been arranged, according to a progressive average of deaths, as in the table we have given, and not according to a progressive average of marriages, as in Mr. Sadler's table. Hence arises the difference.

but, that the ratio of births to each marriage, or the prolificness remains about the same. This may be more perfectly exhibited by giving the average numbers in the natural order.

Average of six provinces.	Rate of increase of population for 5 years, to 1825.	Deaths one in	Births one in	Marriages one in	Ratio of births to each marriage.
Namur	0.062	57.9	29.8	150.9	5.06
When the mortality was least	0.074	52.3	28.1	141.1	5.1
Moderate	0.060	46.1	28.4	133.8	4.87
When the mortality is greatest	0.062	36.	24.2	121.6	5.

This law of the connection between the number of the marriages and that of the deaths has been fully demonstrated by Mr. Malthus. It remained for Mr. Sadler, *from these same documents* to draw the strange conclusion, which is fully contradicted by them, that the ratio of births to each marriage, or the prolificness of the surviving females was augmented in proportion to the increase of the mortality.

We are happy, in being able, to extract from the pages of an ably conducted contemporary periodical work, some important facts connected with this subject, which are contained in a masterly paper, on the "Present state of the Netherlands."

"The provinces of Drenthe, Friesland, and Luxemburg appear to be those in which the annual increase is the greatest. They are entirely agricultural and pastoral—are more thinly peopled than any others—and are the most healthy, two of them being those in which the proportion of deaths is the smallest in the kingdom. The circumstances of their inhabitants, if not so wealthy as in other parts, are, at any rate, easy; the wages of labour are comparatively high—the poor not numerous—and in one of them (Drenthe) the poor colony of Fredericksoord has been the means of employing industriously the indigent classes. A gradual increase of population might therefore be looked for, since we see a far greater prolongation of life than in other provinces. It is remarkable, that the intensity of fecundity in these three provinces varies extremely; that of Drenthe ranking among the lowest (the 15th) of the nineteen provinces; that of Friesland being high (the 2nd); and that of Luxembourg being about the average. South Holland is also a province where the rate of increase is high, and the intensity of fecundity low; from which facts we are induced to doubt considerably of the value of any speculations upon population, of which the intensity of fecundity is the sole basis. The highest fecundity of the Netherlands is in East Flanders, where the marriages are the fewest, and the annual increase smaller than in any province, except North Holland; and it is also high in Zealand, where the annual increase is very small. It is true, that in North Holland, and Limburg the increase is slow, and the fecundity small; but the circumstances of these provinces are identical, not in their populousness (for one is very thickly, the other very thinly peopled) but in their unhealthiness; the dampness of their climate, and the exhalations arising from the marsh lands and stagnant waters, being well known to all who are acquainted with the localities of Maestricht and Amsterdam. There appears, therefore, *no reason to believe, that the intensity of fecundity has any tendency to diminish in proportion as the population becomes denser; on the contrary, it seems a symptom of an annual increase, and whatever causes promote that increase, appear to contribute to the fruitfulness, rather than to the barrenness of the females of our species.*"

“ The average issue of marriages throughout Europe is, according to Von Malchus,* 4 children ; and the annual increase in Europe 2 per cent. in about 215 millions. It is evident, that the degree in which this ratio is exceeded, or fallen short of, by particular states, is very far from being dependent upon their actual density, or rarity, of inhabitants ; for if this were so, the rate of increase in the Netherlands, Wurtemberg, Great Britain, and the Two Sicilies, (whose inhabitants are respectively about, 5067, 4360, 4043, and 3583 to a square mile) would be less than in France, Austria, Russia, and Sweden with Norway, where the numbers on a square mile are respectively 3157, 2628, 649 and 282 ; whereas the actual rate of increase per annum of the eight countries in question stands thus :

per cent.		per cent.		per cent.	
Netherlands	$1\frac{1}{10}$	Two Sicilies	$1\frac{1}{11}$	Russia	$1\frac{1}{20}$
Wurtemberg	$1\frac{1}{2}$	France	$\frac{6}{11}$	Sweden with	
Great Britain	$1\frac{7}{10}$	Austria†	$1\frac{1}{100}$	Norway	$1\frac{1}{3}$

“ We have one word more upon fecundity, considered, as it fairly may be, as *an evidence of a healthy and comfortable state of existence*. In the southern provinces, there are 5.21 children to every marriage, in the northern only 4.87 ; both degrees of which are higher than in France, where the proportion of births, legitimate and illegitimate, to the marriages is as 4.76 to 100 ; and here we have another proof, *how little the rate of fecundity has to do with the density of the population.*‡

The selections which we have made from the various subjects which are treated in Mr. Sadler's work, exhibit favourable specimens of the logic with which these volumes are replete. We are restrained by many considerations from increasing the length of this criticism. Our space is limited, and the subject involves inquiries which, though connected with most important physiological principles, have not that decidedly practical professional tendency, which is necessary to enable them to claim a more enlarged review, in the pages of this Journal ; a claim, moreover, which would not have been admitted at all had not the work been a provincial production. Nevertheless, could we believe that an extension of these remarks would be agreeable to our readers, the same tone and character of animadversion might be applied to almost every chapter of the volumes before us. As our object is only the refutation of scientific error, without reference to any of those contentions, which the great antagonists of political principles may wage in their own arena, we think we have sufficiently demonstrated the nature and the extent of the claims, which this work has on the attention of the scientific world. This duty is perhaps necessary, since there may exist a desire to eulogize the method, the tone, the style, and the reasoning of the work before us ; none of which, however, do we think calculated to strengthen or to adorn a scientific treatise.

We cannot regard these volumes without a sincere but unavailing regret, that energies capable of enduring such protracted labour, pos-

* Statistik und Staatenkunde. Stuttgart. 1826.

† The Austrian increase has been variously stated, but as the rate varies considerably in the different parts of the empire, we have adopted M. Dupin's estimate for the whole.

‡ Foreign Quarterly Review, No. X. Feb. 1830. P. 370, 371, 373.

sessed by a spirit of such enterprise, should have been expended in the erection of so monstrous a fallacy. We cannot but express our conviction, that the work is a strange anomaly in an era distinguished for the progressive triumph of truth. Our minds instinctively recall the ages when error had enthralled the mightiest minds, until they had built up, like pyramids, eternal monuments of the slavery of the human intellect.

Concerned for no interests but those of truth, we close these volumes, as we opened them, without any acrimony of spirit, but, with sensations like those with which we might gaze upon the labours of Sisyphus, and feel impressed with the moral which the fable conveys to those, who, instead of rocks, uproot facts, and who, in proportion as they toil and strain to overcome their tendencies, suffer from their headlong recoil, and lie crushed and prostrate beneath their inert and ponderous mass.

ART. XII.—*The Eleventh Report of the Director of the West-riding of York Pauper Lunatic Asylum.* 1830. P. p. 20.

THE establishments for the Insane, belonging to the County of York, have attracted a large share of public attention. It will be in the recollection of many of our readers, that to the disclosure of abuses existing in the asylum of that city, revolting equally to science and humanity, we are indebted for the commencement of that salutary system of Parliamentary investigation, by which the condition of the unhappy maniac has been so greatly ameliorated. We wish not to perpetuate the memory of those proceedings, which terminated with the entire expurgation of a particular lunatic asylum; we allude to them as marking a new era in the history of the public mad-houses of this country, coeval with a radical change in their method of control, and superintendence, and the introduction of a system of mild and benevolent discipline.

The York lunatic asylum, may, we believe, now challenge the most severe scrutiny.

The “Retreat” which owed its origin, in 1793, to the calm wisdom and active philanthropy of the Society of Friends, has enjoyed a large portion of merited fame. It afforded one of the earliest examples of the superior efficacy of the mild treatment, and in the prudence and benevolence of its economic arrangements, it has furnished an admirable model for general imitation.

The asylum at Wakefield, which was founded nearly twelve years ago, may be regarded, as one of the most important institutions of this kind in the country, both from its magnitude and its facilities of internal accommodation and arrangement. From the very sensibly written Report before us, it appears that the average number of patients contained in the house in the course of last year, was 253. Additional buildings are erecting which will probably contain fifty more patients. The total number admitted since the opening of the

institution, in November 1818, has been 1271 : viz. males 648, and females 623 : of whom 566 have been discharged cured—103 relieved, and 349 have died.

The proportion of cases discharged cured is highly favourable to the character of the establishment. That the cures are not more numerous, the Director ascribes very rationally to the late period after the commencement of the disease, at which the patients are sent to the asylum. We are happy to perceive that this very important fact has obtained the special notice of the Metropolitan Commissioners, appointed to enquire into the lunatic establishments of London. They remark in their lately published Report, that in most of these establishments, “very little attention is given to any curative process,” not in consequence of the apathy or inhumanity of their respective managers, but because the disease is rendered permanent, by “the tardiness of the parishes and the relations of poor persons in sending them there.”

The mortality of insane patients, compared with that arising amongst those labouring under ordinary disease, will surprise those not experienced in the history of insanity. At Wakefield, the proportion of deaths appears to be from one-third to one-fourth of the number of patients placed under treatment. This is not an extraordinary amount in reference to pauper lunatics, many of whom had not been the subjects either of medical or moral care until the disease had existed several years, during which time, irremediable organic changes had occurred not only in the brain itself, but in remote structures, rendered peculiarly susceptible of morbid actions, from the depressed condition of the nervous energy. The list of deaths has been also augmented by the prevalence of epidemic dysentery in this institution, an interesting description of which appears in our present number.

At the close of Dr. Ellis's report we have some valuable tables which comprise the experience of the Wakefield Asylum, relative to the period of life when insanity has occurred, its relation to the sexes, and its relapses and recurrences.

All public hospitals and especially those for the treatment of insanity only realise their important ends, when, in addition to their efficacy in promoting the cure and safety of their inmates, they become schools of professional information. The whole science of mental disease is comparatively of recent origin ; the discoveries of which it can boast are so few, as to entail a deserved reproach on the professors of the healing art, and yet sufficiently numerous to stimulate to diligent and persevering research. “Even Medical men” (says the Director) “have not yet turned their attention to it as it deserves ; and though a bodily disease requiring remedies for its removal on its first coming on, as much as gout, dropsy, or fever, the study of it forms as yet no part of a regular medical education—an evil greatly to be deplored ! No one complaint to which the human frame is liable, has been involved in the same obscurity, assumed such varied shapes, such nice shades in the symptoms, that to speak with cer-

tainty even of its existence or non-existence, sometimes perplexes those most conversant with it."

To secure the benefit of its wide and multiform experience, it is one of the regulations of the Wakefield asylum, that a circumstantial record be kept of the history and treatment of every case admitted. With these advantages the professional public will look (and we really hope that they will not look in vain) to the intelligent medical officers of that great establishment, for valuable illustrations of the deeply interesting subject of insanity. It will afford us much gratification, if our journal be selected as the vehicle of such communications.

P A R T I I I .

BIOGRAPHY.

Memoir of Thomas Waterhouse Esq., late Surgeon of the Infirmary, Sheffield. By
ARNOLD KNIGHT M. D. &c.

MR. THOMAS WATERHOUSE, the subject of this memoir, was born October 5, 1793. When a child, he was distinguished for neatness, regularity, and accuracy, in whatever he did. He was taught the rudiments of Latin by the late Rev. George Smith, who was much pleased with his industry, perseverance and talent. His filial affection was uniform, and ardent. At the age of eleven he was sent to the Free Grammar School, then under the care of the Rev. E. Chadwick. Here he went through the usual routine of school duties, and made considerable advancement in the Latin language. He remained at school until the period of his apprenticeship. In 1807, he became the pupil of Mr. Staniforth sen. and remained under his roof until the spring of 1814; when, on the marriage of Mr. W. Staniforth, he resided with the latter until the expiration of his apprenticeship. He remained twelve months longer as an assistant. During the whole of this period, his conduct was so satisfactory as to endear him to every individual of the two families—and his anxiety to discharge the duties of his situation, combined with great suavity of manners, rendered him equally respected by the patients. The feelings of regret when the time of his departure arrived were deep and mutual.

On going to London, he entered at the Borough Hospital. During this period of his studies he corresponded with several of his fellow-students in the country, and, from the letters which are still preserved, he appears to have evinced great talent for minute, and accurate observation—considerable discrimination of character—and a strong bias towards practical, rather than speculative opinions. He retained, amidst the temptations of London, his propriety, industry, and integrity. He commenced practice in Sheffield in the autumn of 1816, and the same year assisted in establishing the "Medical Book Society." He was afterwards appointed treasurer and secretary to it. In 1819 he was elected one of the parish surgeons; whilst in office he performed the operation of Lithotomy, removed a diseased eye, introduced, it is believed, the custom of post-mortem examinations, and was most assiduous in checking the ravages of small pox, when they prevailed, by establishing a Vaccine Institution. The same year he was one of the original founders of the "Medical and Surgical Society." To which he was successively appointed treasurer, secretary, and president. He read papers before it on the following subjects: 1.—Retention of urine. 2.—Wounded arteries. 3.—On Purpura Hæmorrhagica. 4.—On some appearances which are found in the stomach and small intestines, when death has suddenly occurred after a full meal. 5.—On dislocation of the knee joint. 6.—On strangulated hernia. 7.—On aneurism. 8.—On the Taliacotian operation. Several of these papers possess considerable

merit, and some of them derive a melancholy interest from being connected with the disease of which he eventually died.

The great object of his ambition was to be appointed one of the surgeons to the Infirmary. About this time he had an attack of fever; when he became convalescent, the probability of his being elected at an approaching vacancy was mentioned to him; the excitement caused a relapse which again placed his life for several days in considerable danger. On the death of Mr. Webb, in 1820, one of the surgeons of the Infirmary, Mr. Waterhouse was elected his successor. He had now arrived at the summit of his ambition, but the following interesting extract from his commonplace book will shew that his happiness was not unalloyed.

“1820, Oct. 6th, 11 P. M.—Formed many good resolutions which I hope it will please God Almighty to enable me to keep. I have just now completed my 26th year, and the fourth year since I commenced practice. I have many things to be extremely thankful to God for; he has blessed me greatly with success in practice—I have already obtained a fair reputation in my profession—have been elected to an honourable post, nay, I have attained to what I always considered the summit of my ambition (the office of surgeon to the Infirmary), may the Lord enable me to fill it with satisfaction to myself. I feel ashamed to confess I am not on good terms with myself, my temper is becoming morose, nay, misanthropical. My professional zeal I am afraid has been declining; I am not so attentive to my patients as I have been used to be, the reason I think is *debt*. Trade is wretchedly bad—money extremely scarce, consequently I receive little, and therefore am embarrassed. But I will exert myself to attend to my accounts—seek out for money—study hard—fag at my profession, and try to be myself again.” Such were the circumstances and sentiments of this excellent man in 1820, and so fully did he act up to his good resolutions, that during the remaining ten years of his life, he not only never was in debt, but acquired some property, obtained a lucrative practice, and collected a library which, as regards selection and extent, might compete with some of the best private medical libraries in the kingdom.

He was one of the promoters of the Literary and Philosophical Society, and, at its establishment, he was chosen joint secretary with Mr. Palfreyman. He held the appointment for several years, when his increasing engagements compelled him to resign. He was afterwards elected a vice-president. He contributed three papers to this society—one on the eye—a second on respiration—and a third on the cultivation of anatomy. At the time of preparing this last paper, he believed himself to be suffering from an internal aneurism, and though racked with pain, he devoted a whole night to finishing it, as his professional engagements allowed him no leisure during the day.

At the establishment of the Medical Institution Mr. Waterhouse was in Birmingham; but no sooner was the fact made known to him, than he expressed the most lively interest in its success, and immediately contributed fifty pounds. On his return he doubled his subscription, and afterwards gave ten pounds more. He presented it with some casts, books, and a very valuable collection of pathological preparations. The members of the Institution wished to have a portrait of him, but he was too ill to have it taken; he, however, particularly requested that whatever illustrations of disease his body might supply, should be presented to the museum.

In July 1825, his horse fell with him; he felt something suddenly give way in his thigh—he soon found it to be an aneurism. In July, 1826, he consulted Mr. Hodgson of Birmingham about it. In January 1828, the femoral artery was successfully tied. The ligature came away on the 23rd day and he returned home in March. In January 1829, he consulted Mr. Hodgson about an aneurism in the other thigh, and he became apprehensive that another was forming in the thorax. In September, 1829, he went to Birmingham, to have a second operation performed, but the belief of mischief about the aorta induced Mr. Hodgson to wait—at length however symptoms of such an alarming nature came on as admitted of no further delay; the operation was accordingly performed—the ligature came away, and every thing connected with the aneurism of the femoral artery went on most favourably—indeed the improvement of his general health encouraged a faint hope that the pectoral symptoms might proceed from merely

functional derangement. They continued however to increase; on his return home he was supposed to have taken cold, and his pulmonary complaints were much aggravated, cough, dyspnoea, profuse perspirations, hæmoptysis, copious expectoration and quick pulse indicated a serious affection of the lungs, and although there was not any external appearance of thoracic aneurism, there could scarcely be any doubt of its existence, Mr. W. himself it is believed had no doubt of it, though he seldom alluded to it; but on one occasion after a severe attack of hæmoptysis, as soon as he had recovered himself, he observed that he thought the aneurism must have burst, "for," he added, "I am sure there is one."

On the 3rd of April he was more than usually distressed with difficulty of breathing, the muscles of his face were convulsed, and his pulse became exceedingly quick and fluttering, it was thought he could scarcely survive the day, he however rallied again towards evening, and continued until the 7th of April, when he fell into a tranquil sleep, and expired without a groan about five o'clock in the morning.

About thirty-six hours after death a post mortem examination was made—there was not much emaciation, and no external appearance of thoracic aneurism—there were extensive adhesions of the pleura pulmonalis, and costalis on both sides of the chest—about two ounces of fluid were found in the pericardium. The heart was nearly twice its natural size—there was an aneurism at the arch of the aorta about the size of a small orange, and strongly adherent to the anterior part of the trachea. On the trachea being divided a large quantity of muco-purulent fluid escaped—the lungs were studded with tubercles, some of them in a state of ulceration—there were remains of the tumour in the thigh last operated on—that of the other thigh had disappeared—the abdominal viscera were healthy.

Mr. Waterhouse was pleasing in his manners, gentlemanlike in his deportment, and attentive to his personal appearance. His intellectual faculties were of a high order—his perceptions were clear—his judgment sound—his thoughts vigorous—his decisions prompt—his memory retentive—his reasoning clear, and correct rather than profound, and more practical than speculative—in discussions he preferred a few striking facts to a long array of weak argument. He had considerable hesitation in speaking, but he wrote with propriety, force, and even elegance.

Mr. Waterhouse's moral character was equally excellent. He was a zealous and consistent member of the Independent Church, and attended strictly to his religious duties. His morality however was neither austere, ostentatious, nor obtrusive. He was ever more ready to excuse others than himself, and never injured the cause of virtue by making goodness appear unamiable.

In his professional character he was deservedly popular—his kind and conciliating manners made his visits always acceptable to his patients—the friendly interest he took in their welfare seldom failed to win their confidence, and he secured it by the skill and address, with which he conducted the treatment of their respective complaints. His practice was becoming very extensive and respectable when the state of his health made it necessary for him to limit his exertions, and he then formed the design, if he had lived, of acting only as an accoucheur, and consulting, and operating surgeon. As an operator indeed he particularly excelled—the grace and elegance with which he used the knife, shewed him to be perfectly master of it. The consciousness however of this excellence did not betray him into unnecessary operations. He had an exalted idea of the resources of nature, and he delighted to discover, and avail himself of them in the treatment of disease. His intercourse with his professional brethren gained for him their respect, and confidence. His funeral was attended by almost all the medical practitioners in the town, and by several from the country. He was on the best terms with his colleagues at the Infirmary. To that institution he devoted all his energies, and he was rewarded with the gratitude of the patients, and the confidence of the governors. His resignation was accepted with every mark of respect and attention, and at the election of his successor, Mr. W. was appointed an honorary surgeon for life;—at the same meeting a vote of thanks to him was most feelingly and eloquently proposed by Mr. Wake, and carried with the hands, hearts, and voices of the most numerous board ever assembled within the walls of the Sheffield Infirmary.

PART IV.

MEDICAL INTELLIGENCE.

West Riding of York Medical Charitable Society.

ABOUT two years ago a society was organized at Leeds, whose principal object was to raise a fund for the relief of the widows and orphans of medical practitioners dying in exigent circumstances; and for medical men themselves incapacitated by age or infirmity, and unprovided with pecuniary resources. The annual subscription of a guinea, or a donation of ten guineas, entitles a practitioner to relief, either for himself or family, the amount of which however, is determined by the members of the society collectively, on a statement of the particular claims of the applicant.

The society's fund at present scarcely amounts to five hundred pounds: and it being a resolution of a general meeting, that no applications for relief shall be admitted until the funds reach the sum of £2000, the society has not yet commenced its benevolent operations.

On the first of July 1830, the second annual meeting of this excellent association took place in the Court House, Wakefield, at which were present, medical men from nearly all the principal towns of the riding. Dr. Thorp, the president, occupied the chair. A report was read by the secretary, Mr. Garlick, and a financial statement was made by the treasurer, Mr. Hey. An animated discussion took place, in reference to the "charitable" principle of the society, which, however, terminated without any specific resolution, there being only one individual present whose sentiments were not entirely coincident with the views embodied in the original plan and constitution of the society.

After the transaction of business, the meeting adjourned, and in the afternoon nearly seventy medical men, members of the society dined together at the Stafford Arms. Nothing could exceed the harmony and good feeling which prevailed. Dr. Thorp again presided, and contributed much by his exertions in the chair to the interest of the meeting. Several appropriate toasts were given, amongst which we must not omit to record one by which *we* were peculiarly honoured, "Success to the North of England Medical and Surgical Journal." In acknowledging this kind notice of our enterprise, we can only remark that the warm patronage and active co-operation of a body of practitioners, so respectable as that assembled on the present occasion, would go very far to secure the success of our undertaking. We have noticed the proceedings of the West-riding Medical Society, with a view to recommend the formation of similar associations in other districts of England. Independently of their primary benevolent character, they are calculated to subserve the interests of the profession by promoting a spirit of more cordial union amongst its members, by bringing into friendly collision the scattered elements of the medical community; and while they are productive of much rational pleasure, their remote tendency is to diffuse useful information, and to advance the progress of medical science itself.

We have much regret in announcing the death of W. SIMMONS Esq., which took place at his house in George Street, Manchester, on the evening of Sunday the 4th instant. During a period of nearly 40 years Mr. S. had been connected with the Manchester Infirmary, as senior Surgeon, and the welfare of that establishment was always the prevailing care of his vigorous and active mind. Remarkable for his firmness, decision, and punctuality; for consistency of character, and a high sense of honour; for his unceasing attention to the duties of his profession, and a strict determination to maintain its dignity and respectability; the character of Mr. S. presented many admirable features, and his memory will ever remain dear to his pupils, who will gratefully recollect the peculiar force and clearness of his precepts, and now feel the benefit of that strict order and discipline which he invariably enjoined. B.

July 15, 1830.

TO CORRESPONDENTS.

Owing to the limited space devoted to Original Papers, the great pressure of communications which have been received, and the unexpected length of some of them, the Editors regret to discover, that they have miscalculated the number of contributions which the pages of the Journal can contain. They have endeavoured to obviate this difficulty, by printing one sheet more than the quantity, which will ordinarily constitute a number of the Journal; but they have, notwithstanding, been obliged to postpone some VALUABLE CASES, with the enumeration of which their table of contents closed. They have, for the same reason, omitted also the Retrospective Criticism of the works of Sydenham. They however announce that these articles, with a variety of other communications, will appear in the second number, which will be published on the first of November.

Owing to the multifarious details connected with the important subject of Dr. Lyon's Paper, and the great length to which it extended, they have been obliged, with his consent, to omit certain passages, chiefly of local interest. If any obscurity has been unconsciously occasioned by this circumstance, they alone are responsible for it.

THE
NORTH OF ENGLAND
MEDICAL AND SURGICAL JOURNAL.

NOVEMBER 1, 1830.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Sketch of the Medical Topography and Statistics of Manchester.* By EDMUND LYON, M. D., Physician to the Manchester Infirmary, Dispensary, and Fever Wards.

(Continued from No. 1.)

III.—It was proposed, in the last place, to give some account of the Infirmary, and other kindred institutions; of all which as it is the most important, so the largest share of attention will here be devoted to giving a succinct account of the origin, progress, and present state of the Manchester Infirmary.

In the spring of the year 1752, a few gentlemen, with Mr. Joseph Bancroft at their head, formed the design of erecting a public Infirmary in this town, for the relief of the sick and maimed poor of the surrounding district. By way of experiment they hired a small house in Garden Street, Shudehill,—at present a miserable neighbourhood,—and on the 24th of June opened it for the relief of Out-Patients; but In-Patients were not admitted until the latter end of July. The professional officers appointed were Drs. Mainwaring, Walker, and Kay, as physicians; Messrs. Burchall, Charles White, and Edward Hall, as surgeons; and Messrs. White

and Richard Hall, as surgeons extraordinary,—an appointment which appears to have been dropped in the following year. The number of patients admitted the first year was 75 In, and 249 Out-Patients; the receipts were £854,—the expenditure £405:—the utmost number of beds provided in this house appears to have been 27.

At a general meeting of the subscribers in December 1752, it was unanimously resolved to erect, with all convenient speed, an Infirmary capable of containing 40 beds; and a piece of ground was selected for the purpose: but the situation being afterwards thought too confined, and Sir Oswald Mosley, Bart. offering to grant a lease for 999 years of the more eligible plot, known by the name of The Dobb or Daub-Hole Field, at a yearly rent of £6.,—it was determined to enlarge the design; and accordingly on the 20th of May, 1754, the foundation was laid of a building,—consisting of a centre with two low wings, and calculated to hold 80 beds,—which was ready for the reception of patients in the following year. The land belonging to the Infirmary amounts to about $5\frac{1}{2}$ statute acres, and has a front of 250 yards towards Piccadilly, with a pool of water extending nearly the whole length. In the year 1808, an Act of Parliament was obtained to enable the present Sir Oswald Mosley to convey to the Trustees this property to be used for the purposes of an Infirmary and Lunatic Hospital. The original structure stood in the centre of the area, quite insulated; but various additional buildings have been subsequently erected, so as considerably to diminish the unoccupied space: viz:—the Lunatic Hospital, founded in 1765; the Public Baths, in 1780; the Dispensary, in 1792; and a range of dwelling-houses, erected at various times on the outer margin of the land appropriated to the Lunatic Hospital.

Dr. Percival was engaged only a short time in the active service of the Infirmary: his name appears for the first time in the annual Report for 1778-9, as one of the physicians; and that of Mr. Richard Hall as junior surgeon. On the 23rd of March 1779, at the request of the Physicians, four Assistant Physicians were appointed;—namely, Drs. Wright, Cowling, Mitchell, and Stapleton: Dr. Eason, at his own request, was afterwards added to the number. Dr. Percival resigned at the latter end of 1780, and Dr. Wright was elected in his room.

In the year 1781, an offer made by Drs. Wright, Bell, Cowling, and Eason, to attend at their own houses all poor persons who should be afflicted with any contagious disease, or who could not themselves come to the Infirmary, was accepted; and from that time medical Home-Patients have been regularly visited. In 1782, a further change was made, con-

sequent upon the above alteration of plan:—Dr. Mainwaring and Dr. Kay, it is stated in the annual Report, “after thirty years’ attendance upon the Charity, with equal credit to themselves and benefit to the poor, thought proper to decline this very fatiguing employment, though at all times ready, when called for, to give their future attendance:” the public thanks of the Trustees were therefore voted “for their long and faithful services,” and they, along with Dr. Percival, were appointed Physicians Extraordinary; the acting physicians were Drs. Cowling, Eason, and Bell. The number of Home-Patients admitted in the first complete year after the adoption of the plan was 357; in the second year, 652; and in the third they amounted to the number of 1032. In 1786, a Clerk was appointed to assist the Physicians in attending to Out and Home-Patients. In October, 1789, Dr. Ferriar and Dr. Bew were appointed Physicians to the Home-Patients, whom they were at first instructed to attend in weekly rotation; but at the subsequent quarterly Board they were directed to divide the town into convenient districts, and each take one.

In the course of the year 1790, a complete revolution took place in the medical establishment. In April of that year a proposal was made to extend the benefits of the Infirmary by affording surgical and other assistance in cases of midwifery; but the proposal, though favourably received, was not adopted, in consequence of another institution for that special purpose being set on foot before this project could be regularly taken into consideration at the Midsummer Quarterly Board. What occurred at that meeting, however, was enough to prepare the way for all that followed; and at a Special Board, held July 22nd, Dr. Darbey was elected Physician to the Home-Patients, to act in conjunction with Dr. Ferriar and Dr. Bew: at the same time a Committee was appointed to consider, and report upon, any proposals that might be made for an extension of the Charity. In the interval between this and the Michaelmas Board, Dr. Eason and the three Surgeons gave in their resignations, undertaking to continue in office until their successors should be appointed. On the 23rd of September, accordingly, four Physicians, and six Surgeons were elected; and it was ordered, that all the physicians and surgeons should, for the future, equally undertake the care of every class of patients; and that Out-Patients should be admitted every day of the week (except Sunday), instead of being restricted, as they had hitherto been, to Monday: Dr. Cowling, and Dr. White, however, were excused from attendance on Home-Patients, if they desired such exemption; but these two gentlemen soon after likewise resigned their situations, and Dr.

Bardsley of Doncaster, and Dr. Parr of Liverpool were elected in their stead on the 4th of November. The following is a list of the medical officers thus appointed, of whom those distinguished by a * are yet living:—

JOHN FERRIAR, M. D.	} PHYSICIANS.	WILLIAM SIMMONS,	} SURGEONS.
GEORGE BEW, M. D.		JOHN BILL,	
ROBERT DARBEY, M. D.		ALEX. TAYLOR, M. D.	
PETER LE SASSIER, M. D.		* ROBERT KILLER,	
* SAM'L. A. BARDSLEY, M. D.		* MICHAEL WARD,	
JOSHUA PARR, M. D.		GAVIN HAMILTON,	

The physicians very soon lost one of their number, and in 1796 were reduced to three, from the mere absence of eligible candidates. It was not until 1805 that the full number was again made up; and since then there has never been any deficiency of that sort. A similar incompleteness existed for some time in the surgical department also; but it is unnecessary to enter particularly into the circumstances which led to that state of things. In the year 1800, a second Clerk to the Physicians was appointed, in consequence of the augmented numbers of Out and Home-Patients; and early in 1826, a third was found necessary.

Soon after the appointment of the six Surgeons, and at their suggestion, the plan was adopted of affording assistance to poor married women in labour, at their own homes, when the midwife should be unable to deliver them;—a rule still in existence, but fallen into disuse.

The Library also owes its existence to those gentlemen; who, soon after coming into office, proposed to the Board to relinquish their claim to the sum of 60 guineas, which had formerly been paid to the Surgeons out of each Apprentice-Fee, as a compensation for the privilege of seeing their practice enjoyed by the Apprentices;—and that the money so relinquished should be devoted to the purchase of books, and the making of anatomical preparations, under the direction of a majority of the Physicians and Surgeons, at their monthly consultation held regularly on the first Thursday of every month. Under this regulation a valuable medical Library has been formed, and is annually receiving additions: the project of forming a Museum did not succeed so well.

The Infirmary had already been enlarged by the raising of its wings; but in 1792 advantage was taken of the necessity for a building in which to conduct the business of the Dispensary, to make a very considerable addition to the surgical wards, and to the domestic apartments. This building was erected behind the north-west wing of the Infirmary, to which it was very clumsily joined; as the architect, or his employers,

for what reason does not appear, chose to make the height of the new edifice many feet lower than that of the old one. When first proposed, it was resolved that some of the upper rooms should be so contrived as to have no communication with the Infirmary; and these were intended to be set apart for the reception of any patient that might be seized with fever, or other infectious disorder, during his stay in the Infirmary; but this resolution was afterwards rescinded. The building was finished in 1793: it consists of three stories;—the lower one containing an Apothecary's shop, a Hall for Out-Patients, and receiving-rooms at each end for the physicians and surgeons,—not so commodious as might be wished; the middle story contains bed-rooms for the resident officers; and the upper one, surgical-wards for men.

In the year 1824, the necessity of providing additional accommodation for In-Patients was strongly felt; and in the following year the Trustees resolved to adopt a plan of enlarging the building, by which, without encroaching materially on the open ground, space for 60 more beds might be obtained, besides a room for the reception of Accidents, and a great augmentation and improvement of the domestic apartments, and offices; whilst an ornamental stone front was to be given to the whole. The essential parts of the plan have been carried into effect; but the ornamental part is reserved for a more propitious season, and perhaps never will be completed according to the approved design.

The principal entrance is in the centre, fronting Piccadilly, and opens into a vestibule extending nearly to the middle line of the building; on the other side of which line is the main staircase, broad, and easy of ascent. The common entrance is at the end towards Market Street, and leads directly into a broad passage, which runs entirely through the middle of the main building. On the right hand side of the passage are—a spacious common room, in which the resident members of the establishment assemble to take their meals;—a passage leading to the Dispensary, with a flight of stairs conducting to the basement story, and another to the first floor;—a Servants' Hall, formerly the kitchen;—the grand Staircase:—the Secretary's office;—the Library, and room for consultations;—a door through which female convalescents may have access to the garden behind the Infirmary, and a small staircase communicating with the female wards;—and, finally, two apartments at present used as bed-rooms.

On the left hand lie in succession the sitting-rooms of the House-Apothecary, Apprentices, Matron, and House-Surgeon;—the Vestibule,—the Board-Room,—and two other rooms, one of which is occupied by the Physicians' Clerks.

The first floor corresponds in form with the ground-floor, and is appropriated to the reception of medical cases: the north-western half is allotted to males, and is divided into four wards, containing respectively 13, 10, 9, and 7 beds,—in all 39. The other half, occupied by female patients, is divided into three wards; two of them containing 9 beds each, and the other 13,—in all 31: two small rooms, formerly used as sick-wards, are now converted into a Nurse's kitchen, and sleeping-room. The largest of these wards measures $39\frac{1}{2}$ feet by $18\frac{1}{2}$, with a height of $14\frac{1}{2}$ feet; the smallest measures nearly 25 feet by 18, giving an allowance of from 55 to 63 square feet to each bed. It is to be regretted that there is not, at each end, at least one small ward, containing two or three beds, for the reception of cases which peculiarly require seclusion and stillness. Over the Vestibule this floor contains a recess that, when closed by a curtain, serves for a chapel, in which such patients as are able, attend the occasional reading of prayers by the Chaplain of the week.

The upper story, divided in almost the same way, is appropriated to the reception of surgical cases. The female end consists of five wards, containing 37 beds; the smallest having 4 beds, and the largest 10. The Surgical wards for males are 4 in the main part of the building, situated over, and corresponding in size with the medical wards, though not quite so lofty;—and 7 in the upper story of the Dispensary wing, directly behind the former; one of them containing 10 beds, the others from 2 to 6 beds each: besides which there is an empty ward on the first floor of the same wing, capable of containing 10 beds, which is reserved for cases of emergency,—being rather inconveniently situated for ordinary use. The dimensions of the ten-bedded ward, which forms a link between those in the front and those over the Dispensary, are 24 feet 9 inches, by 22 feet 6 inches, with a height of 11 feet 8 inches: of the small wards behind, to which there is a descent by six steps, the smallest measures 15 feet 9 inches, by $10\frac{1}{2}$ feet; and those with three beds are nearly 16 feet by 15; but their height is no more than 9 feet 10 inches. It has been proposed that, at a suitable opportunity, this part of the structure shall be taken down, and rebuilt in accordance with the recent improvements. The whole number of beds for surgeons' male patients is 71; and the number now provided for patients of all classes is—

for females	68
for males	110
making a total of . .	<u>178</u>

The bedsteads are of iron, and no curtains are allowed.

The ventilation of the wards is provided for by apertures in the upper part of the wall separating them from the passage; and in some wards by a division of one pane in each window, in such a manner that the upper half is made to overlap the under and inner half, and to leave a space of an inch between the two. The new wards are furnished with flues, opening near the ceiling; and the original surgical wards have openings in the ceiling itself, which afford the most perfect ventilation. Open fires are also used in every ward.

The number of nurses regularly employed is,—one at each end of the medical wards, two at the women's end of the surgical wards, and at the men's end four women and one man-nurse.

The Theatre for operations is in the centre, over the Chapel: it is well lighted from above, and in every respect, but that of size, well adapted to its purpose; but there is not room for the convenient accommodation of such a number of spectators as would often be disposed to attend.

There is a sufficient number of water-closets on every floor; some constructed after the model of those in the Derby Infirmary; others merely with common double doors;—the valvular door being inconvenient to those on crutches. In summer time some of the water-closets have been rather offensive; though the effluvia are for the most part carried off pretty effectually by ventilating flues.

The pharmaceutical operations are carried on in a part of the Dispensary wing, conveniently situated for the distribution of medicine to all classes of patients. The Laboratory, and the Store-rooms for the more bulky articles, occupy the basement story of this wing; to which have been recently added the cellars under the Sulphur-Baths, and under the new Dead-House, erected in the rear of the Dispensary. A very commodious steaming apparatus is employed in the Laboratory for the preparation of decoctions; for evaporating extracts, &c.; and for preparing and melting plasters. In a separate building, adjoining the Lunatic Hospital, a complex machine is fitted up for spreading upon calico the Empl: Resinæ, and Empl: Saponis: it is a question scarcely yet decided, whether any saving of time or labour, or any superiority in the style of work is effected by this operation.

Early in 1828 was published a new and enlarged edition of the Pharmacopœia for the use of this Infirmary; which,—taking the London Pharmacopœia for its basis; rejecting from the list of Materia Medica whatever seemed calculated rather to please the eye and the palate, than to have any remedial power; and placing on that list such compounds as are bought

in a prepared state;—contains, in alphabetical order, a series of officinal and extemporaneous formulæ such as are most commonly wanted in hospital practice. Though economy was especially studied in the compilation and remodelling of these formulæ, it was never allowed to interfere with the higher principle of utility; and whilst Roses, and all their preparations,—Cochineal, Saffron, and the like, have been systematically discarded; and Molasses substituted for Honey and Syrup; no medicine of acknowledged efficacy has been excluded on account of its price. All drugs are purchased by sample, and by written tender; and those of the best quality are uniformly sought for. The House-Apothecary has under his direction six Apprentices, and three men in the Laboratory under the title of Still-men; the senior apprentice is not required to attend the shop during his last year, in order that he may enjoy ample opportunities of seeing the whole practice of the hospital.

The kitchen, larder, pantry, and dairy, the bake-house, brew-house, wash-house, and laundry, are in the basement story of the principal building. Steam is partially used in cooking; but steam-power is not used in any department for the purpose of saving human labour. In the laundry is a chamber for drying clothes, on Sylvester, or Strutt's plan, which is reported to be not perfectly efficient. The daily supply of milk is 24 gallons; out of which from 48 to 58 pounds of butter are made in the course of a week. The domestic duties of the establishment are performed by ten women and one man, assisted occasionally by a char-woman, under the direction and control of the Matron.

The present Medical Establishment consists of six Physicians, and six Surgeons; an Apothecary, with his apprentices; a House-Surgeon; and three Physicians' Clerks, whose duty it is to assist the Physicians in their Dispensary practice:—these gentlemen must be members of the Company of Apothecaries, and are required to engage for a term of three years; * they receive a moderate stipend, and are provided with board and lodging. The House-Surgeon undertakes to serve without salary for two years, and in the absence of the surgeons takes charge of all the surgical cases; as the Apothecary does of the medical, in the absence of the physicians.

The routine of duty requires that one physician, and one surgeon, in rotation, shall attend every Monday morning to select for admission those who come recommended as In-

* The only *negative* qualification imposed by the *existing rules* is exemption from the ties of wedlock.

Patients; so that each physician and surgeon admits fresh patients once in six weeks, and takes under his care all cases of emergency which are admitted in the course of that week. A patient who has been in the house two months, may remain another month on the certificate of the physician or surgeon that it will probably be beneficial; but no patient can remain longer than three months, without the sanction of a general monthly consultation.

In the Dispensary branch of the Charity, it is the duty of each physician and surgeon to attend two mornings in every week to receive Out-Patients;—the first day to admit new cases, and prescribe for the old ones; the second for the latter purpose only: thus, the physicians and surgeons standing 1st and 4th on the list have to attend on Mondays and Thursdays; and so of the rest, in rotation. As to that class of patients, whose cases require them to be visited in their own dwellings, and who are distinguished by the title of Home-Patients, the town within certain limits,—(which exclude a large portion of the outer division of Manchester, all Ardwick, Chorlton Row, Hulme, and Pendleton, and a great part of Salford,)—is divided into six Districts, which are assigned in rotation to the medical officers;—the distribution being changed every six months. The recommendations of Home-Patients, whether medical or surgical, are delivered every morning, except Sunday, to the physician or surgeon of each district respectively, who is required, on that day at least, to visit such patients; and afterwards as his own sense of the urgency of any case may suggest; or whenever the Physicians' Clerk, or Surgeon's Pupil, to whom the ordinary care of patients of this description is entrusted, shall request his attendance: the surgical home-patients are comparatively few. Beyond the limits of these districts, to a considerable extent, the Clerks also visit patients at their own dwellings, under the designation of Out-District Home-Patients. It is an established rule, that no domestic servant, or apprentice of persons able to pay for medical assistance shall enjoy the benefits of the Charity at the house of their master or mistress. The physicians and surgeons are empowered to place patients, properly recommended, in any of the three classes which may appear most suitable to the respective cases.

It has at various times been proposed to increase the number of physicians and surgeons at the Infirmary, on the ostensible ground of the increase of the town; but the general sense of the Trustees has been against the scheme, and has led to the adoption of a more effectual mode of meeting the too numerous claims for gratuitous professional aid, by the esta-

blishment of independent Dispensaries in different quarters of the town. Yet it is worthy of consideration, whether important advantages might not arise from the institution of a class of Physicians and Surgeons Extraordinary, to consist of those who had served in ordinary for thirty years. The existence of such a class would open an honourable retreat to the veteran, who might be willing to relinquish the more active duties of the office to a younger man, if he could do so without abandoning all connection with an Institution, to which he had become habitually attached; and the fruits of long experience might still be gathered in consultation, when it would be scarcely reasonable to look for more laborious exertions. A suggestion to this effect, however, proceeding from the faculty on a late occasion, had no other result than to produce an expression of surprise by no means flattering to the professional character;—indeed plainly intimating a suspicion on the part of the public, that a sordid self-interest is the ruling principle of medical men in general: the seeming absence of such a motive in the instance alluded to being the cause of surprise.

The government of this establishment is by weekly and quarterly Boards, open to all Trustees; who consist of every contributor of thirty guineas, or more, in one sum, and of every contributor of three guineas, or more, annually: before the year 1816, when the Rules for the government of the Infirmary were revised, the qualification of a Trustee was less by one third. Subscribers of smaller sums have privileges in recommending patients proportioned to the amount of their contributions. The medical officers are not Trustees *ex officio*.

The officers of the Infirmary, besides those already mentioned, are a President; a Treasurer: an indefinite number of Deputy Treasurers, who assist in rotation in examining the accounts; four House-Stewards; two Auditors; and two Visiting Apothecaries. A Secretary, and a Collector have their time fully occupied with their several duties.

In order to ensure, as far as possible, a strict attention to duty in every department, and to prevent abuses, seven subscribers residing in the town, taken in alphabetical order, are every week requested to assume the office of Inspectors of the Infirmary, Dispensary, and Lunatic Hospital, and to report their observations in a book provided for that purpose. The Weekly Board, which sits every Monday, is ready to investigate every complaint brought before it, and, if well founded, to apply a remedy; whilst misapprehension, and misrepresentation are brought to light, and all reasonable parties are satisfied.

The Public Baths, which were commenced in 1780, with the combined view of accommodating the inhabitants, and of raising a revenue for the support of the hospital, have within the last six years received many important additions. They originally consisted

of Cold plunge, and shower Baths; common Hot, and Vapour Baths; and two Baths of moderate size,—one at the temperature of Matlock water, the other at that of Buxton. The additions consist of Fumigating Baths for applying Sulphur, or other substances, in the form of vapour; and Water-Baths, impregnated with Sulphur and other medicinal substances, in imitation of Harrogate water. “And, that no means of relief, which Baths and their appendages can supply to the invalid, may be omitted, Leeching, Cupping, and Shampooing will be administered conformably to the directions given.”* Baths of a similar nature, for the use of hospital patients, are established immediately behind the Dispensary. The only deficiency complained of in these baths is the want of a large Swimming-Bath; to supply which a project is in agitation for establishing such a bath by means of a joint-stock company.

The above improvements, along with several others, were adopted on the suggestion, and carried into effect under the superintendence of the late senior surgeon, Mr. Simmons; who for nearly forty years has laboured, with unwearied zeal and assiduity, to promote the interests of this Institution.

After this cursory view of the history and present state of the Manchester Infirmary, it may be useful to exhibit a comparative statement of the expenditure, income, and number of patients at three nearly equi-distant periods of the last ten years. The various items of expenditure are arranged under a sufficient number of heads to give a general idea of the relative magnitude of the most important of them; and an attempt has been made to distinguish, as far as possible, the cost at which the Hospital is maintained, from that of the Dispensary. The annual accounts commence with the 25th of June every year, and are made up to the 24th of June in the year following. In the year ending on the 24th of June 1810, the total Expenditure was £5389. 10s. 0d.; the Annual Subscriptions amounted to £4900. 10s. 0d.; and the number of patients admitted was,

In-Patients . . .	835
Out-Patients . .	5280
Home-Patients .	1363
Total	<u>7478</u>

In the following Table a more particular account is given of the three years named therein.

* Annual Report, 1827.

In the years ending June 24th.

EXPENDITURE.	1820.			1824.			1829.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Provisions, &c.	1861	9	1	1698	7	2	2091	9	11½
Linen, Woollen, Bedding, &c. .	333	8	5	423	4	11	324	1	8
Coals,	196	1	10	183	6	5	228	0	3
Surgical Instruments, and Trusses	257	16	7	230	7	6	255	5	3
Porter, Lint, Lemons, &c. *	61	4	7	106	17	5	88	5	7
Salaries of Resident Officers, .	461	0	0	463	18	6	534	15	6
Wages of Servants and Nurses, .	313	12	6	345	1	5	447	12	11
Miscellaneous,	257	15	6	367	15	0	402	1	5
Alterations and Repairs, . . .	480	5	5	747	5	7	793	8	1½
Total for the Hospital	4222	13	11	4566	3	11	5165	0	8
Drugs, Oil, Spirits, &c. for the Shop,	2032	12	9	3159	2	2	3418	9	2
Leeches,	106	13	9	187	2	6	328	2	4
Total Expenditure	6362	0	5	7912	8	7	8911	12	2

* The charge for Wine is included in that for Spirits in the Shop account.

It should be observed that the expense of enlarging the Infirmary was defrayed out of a separate fund, raised by subscription for that purpose.

TABULAR VIEW OF INCOME.

In the years ending June 24th.

SOURCES OF INCOME.	1820.			1824.			1829.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Interest on Stock	634	14	5	721	15	2	1133	1	1
Annual Subscriptions	4500	10	0	4360	3	6	4611	12	0
Donations and Legacies	1559	19	6	1163	12	6	2754	15	2
From the Lunatic Asylum for Rent, Drugs, and proportion of Secretary's Salary	305	19	9	273	5	10	342	19	1*
Miscellaneous, including an Apprenticeship Fee	342	10	5	297	2	3	586	10	11†
Net Proceeds of the Public Baths .	209	14	9	90	12	10	209	13	9
Share of the Proceeds of the Festival	..	..	..	..	..	..	2500	0	0
Total Income	7553	8	10	6906	12	1	12138	12	0

* In this year a proportion of the House Apothecary's salary was paid by the Lunatic Asylum.

† Including a payment from the Assurance Office.

NUMBER OF PATIENTS ADMITTED IN THE YEARS ENDING JUNE 24TH.			
	1820.	1824.	1829.
In-Patients	1161	1260	1549
Out-Patients	8846	8839	12659
Home-Patients	2675	2100	2866
Out District Home-Patients . .	551	500	928
Total	13233	12699	18002
The number of Accidents being .	2200	2295	3009
Average Expense of each In-Patient	£3 9 3	£3 12 6	£3 6 8

The statement of deaths, cures, and other results is not copied here, because such statements are generally too loosely given to afford much useful information; and the Registers of the Infirmary are not so kept, as to supply the means of drawing up any *general*

account of the prevalence, and comparative mortality of particular diseases. With respect to Out-Patients the utmost that can be expected is a record of the numerical proportion of different forms of disease : so large a number of the cases is lost sight of before their termination, that no certainty as to results can possibly be attained. The Home-Patients are more completely under observation, and an endeavour will be made to render the register of their cases more available for public information than it has hitherto been. The medical cases received into the Hospital are most commonly of a chronic nature, and therefore contribute in a very slight degree to indicate the nosological character of the seasons.

With regard to necroscopical observations it may be stated that, from an excessive deference to popular prejudice, so many forms are to be gone through before a body can be opened, as to present no small impediment to the cultivation of morbid anatomy.

THE LUNATIC HOSPITAL is an appendage to the Infirmary, under the same general government, and attended by the same medical officers ; but having its own Treasurer, and separate funds, with a proper establishment of superintendants and servants. The building adjoins the Infirmary, and with its airing ground, and the site of some dwelling houses towards the street, occupies about 3750 square yards of land, for which a chief rent is paid to the Trustees of the Infirmary : a portion also of the salaries of the Apothecary and of the Secretary is paid by the Treasurer of the Lunatic Hospital. This hospital was founded in 1765, and opened in 1766 : it consists of two stories ; the part allotted to patients being arranged in the form of four broad galleries, or passages, with day-rooms and bed-rooms on each side, and enclosing an open quadrangle in the centre. The ground floor is appropriated to men, and has a dark and gloomy appearance ; the upper floor, which has a more cheerful aspect, is occupied by women, who do not however enjoy so large a space of ground for exercise in the open air as the men. As a place of confinement for chronic cases, in which every indulgence consistent with security should be granted, this hospital is confessedly defective ; and its imperfections have, at sundry times since the year 1792, been represented to the proper authorities. In 1801, when the enlargement of the House of Recovery, and the means of effecting it were under discussion, the four physicians were desired to make a report of their opinion as to the eligibility of converting the present Lunatic Hospital “into Fever-Wards, and erecting a suitable building for a Lunatic Hospital in the neighbourhood of the town.” The Report, presented in August of that year, and signed by Drs. Ferrar, Bardsley, and Jackson, strongly recommended the proposed conversion ; but the proposal was not favourably received by the Trustees. The plan for the enlargement and improvement of the Infirmary, adopted in 1825, contemplates the ultimate removal of this appendage, though the time for its accomplishment must depend upon many contingencies. In the mean time, it may fairly be said, that the central situation of the hospital, and the consequent facility

given to supervision and medical attendance, offer advantages that in some degree counterbalance the acknowledged defects.

No patient is admitted gratuitously; and yet the institution is entitled to a place amongst public charities, because it provides an asylum for the insane at a lower rate than can be afforded by a private establishment; the scale of payments being so proportioned to the circumstances of the parties, that the rich pay a little more, and the poor a little less than the care and maintenance of them actually cost. The amount of payments on behalf of all classes of patients, in general, just covers the annual expenses; and at Midsummer 1829, the balance in favour of the institution,—arising from legacies, donations, and accumulated interest,—was a trifle more than £13000,—part of which may be made available hereafter for the proposed erection of a new building.

There is accommodation for 90 patients: the following table will shew the rate of admissions and discharges for the ten years ending the 24th of June, 1829.

		PATIENTS ADMITTED.			PATIENTS DISCHARGED.		
		Male	Female	Total	Male	Female	Total
Number in the House June 24th	1819	60	30	90			
Admitted in the year ending June 24th,	1820	16	11	27	16	14	30
	1821	8	8	16	17	8	25
	1822	19	8	27	23	9	32
	1823	27	14	41	18	20	38
	1824	12	11	23	18	9	27
	1825	13	13	26	11	10	21
	1826	21	11	32	25	14	39
	1827	21	11	32	21	13	34
	1828	16	12	28	25	11	36
	1829	10	14	24	14	9	23
Total		223	143	366	188	117	305
		188	117	305			
Remaining		35	26	61			

THE PATIENTS DISCHARGED ARE THUS
CLASSED.

Cured	76
Relieved	59
Dead	57
Removed by Friends . .	113
	<u>305</u>

The establishment of County Asylums has had the effect of reducing the number of patients in this place. There are three respectable private Asylums near Manchester, the aggregate number of whose inmates may be stated in general to be about forty-five.

The FEVER-HOSPITAL, under the name of House of Recovery, or Fever-Wards, originated in the year 1796: and though an independent institution, is in strict alliance with the Infirmary, being attended by the same physicians, and (when surgical aid is required) by the same surgeons. It stands about 150 yards to the S. E. of the Infirmary, and has accommodation for 100 patients: a medical gentleman, who must be a licentiate of the Apothecaries' Company, resides in the house; but the requisite medicine is supplied from the shop of the Infirmary. This hospital may perhaps be thought of

sufficient importance to deserve at some future time a more particular notice than the space allotted to this paper will at present admit of.

Next in order of relation, though not of time, are the three DISPENSARIES which have been established since the year 1825;—one in Chorlton-Row, instituted in December, 1825, and opened in the following February, attended by two Physicians, two Surgeons, and an Apothecary; a second instituted in 1826 for Salford and Pendleton, attended by two Physicians, four Surgeons, and an Apothecary; and the third in Ancoats, embracing Ardwick, and the district lying between the Medlock, Great Ancoats-street, and Oldham Road,—instituted in the year 1828, and having a medical establishment of two Physicians, two Surgeons, a consulting Surgeon, and an Apothecary. These have no connection with the Infirmary and Central Dispensary; but were intended to be, and actually are subsidiary to it; although not in so great a degree as they might be, did not the Central Dispensary continue to extend its services to the districts of Salford and Ancoats, as if no establishment of the kind existed there. They have hitherto been conducted on the most economical plan, in houses rented for the occasion: but a suitable building is about to be erected in Salford, where it is probable that the basis of at least a new *Surgical* Hospital will be laid, by providing in the new structure space for the reception of a small number of beds. In Chorlton-Row part of a public building, lately resolved upon, is destined for the accommodation of the Dispensary.

Besides these, a general Dispensary for Children was established in a central situation early in 1829; its medical officers are two general practitioners.

The LYING-IN-HOSPITAL was instituted in the year 1790, by the friends of Mr. Charles White and his colleagues Messrs. Hall, at the time when a proposal for adding an obstetric department to the existing surgical establishment of the Infirmary was awaiting the decision of the Trustees. The business of the hospital was carried on, till 1796, in a house in Salford near the Old Bridge: in that year the establishment was removed to a large building, near the New-Bailey prison, which was designed for an Hotel, but never licensed, and consequently sold for two-fifths of the sum it cost the proprietor, whose unpopular politics drove him to America.

It was the practice originally to admit patients into the house for delivery, as well as to attend others at their own homes: with the decline of income the admission of In-Patients underwent a gradual restriction, until it entirely ceased in 1814;—a pretty strong proof of the public opinion as to the utility or policy of this mode of administering to the wants of the poor. It may indeed fairly admit of question, whether (except in cases of difficulty requiring extraordinary aid) any sort of provision for the gratuitous relief of pregnancy, which is not an accident unforeseen, can in its ultimate effects, and tendency, be really beneficial to the poor themselves. For whatever

teaches the labourer that he need not provide for the natural, and ordinary casualties of life, and so destroys in him the inducement to forethought and frugality, leads directly to his degradation in the scale of society.

The establishment consists of one Physician;—three Men-Midwives Extraordinary;—three Men-Midwives in Ordinary, and three for the Out-Districts;—a resident Apothecary, and a Matron; besides a numerous body of Midwives, residing in various parts of the town, to whom all the cases are in the first instance entrusted, and who are to require the aid of the surgeon for the week only in cases of difficulty: they are paid three shillings for each child, at whose birth they are assisting. Perhaps the most useful result of this Charity will be found in the number of well-taught midwives trained up under its auspices: regular courses of Lectures being given for the instruction of female pupils in the art of midwifery. The largest part of the building is now appropriated to the purposes of a School for the Deaf and Dumb, supported by voluntary contributions.

“THE EYE INSTITUTION” was founded in 1815, and has had to struggle with many financial difficulties. Commencing under the care of a single Surgeon, a second and a third were successively added; and the present medical establishment consists of a Consulting Physician, two Surgeons, and two Assistant Surgeons. A small house in Princess-street has been fitted up for the purposes of the Institution; and four, or five beds are provided for the reception of cases requiring the more serious operations. The number of cases annually treated here has exceeded 1000; and the expenditure has rarely been more than £400, whilst the regular income has not amounted to so much. Some of the results of the practice will probably be given in future numbers of this work.

The last charitable institution requiring notice is THE LOCK-HOSPITAL, founded in 1819, and now situated in Bond-street; the number of beds for In-Patients is eight, each occupied in case of need by two women; but the Out and Home-Patients are the most numerous classes. The medical officers are two Surgeons, a Consulting Physician, and a stipendiary Assistant Surgeon. Females only are admitted as In-patients, and endeavours are made, in the progress of their cure, to reclaim them from their evil course of life; care being taken to provide for such as appear to deserve it, either some reputable employment, or a temporary asylum in the Penitentiary, which may be regarded in some measure as an auxiliary institution. No patient, once cured at this hospital, can ever be admitted a second time.

It ought to be stated, in conclusion, that ample means of instruction for medical students exist in Manchester:—besides a school for the teaching of Anatomy only, there are two establishments in which lectures are delivered upon every branch of medical and surgical science; and it has been publicly acknowledged that no class of pupils is better prepared than those who have been educated in these schools.

ART. II.—*A Case of Extirpation of an Inverted Uterus, with Remarks.* By JOHN ADDINGTON SYMONDS, M. D. (Edin.) Oxford.

THE poor woman, whose case I am about to relate, was a patient of Mr. Webb, and through his kindness I had an opportunity of observing its progress.—

Mrs. Tidmarsh, aged 18, was about two years and a half ago delivered in the country of a living child, at the full period of gestation. She reported that the labour was lingering, and that the placenta, which had been detained a considerable time, was removed with great violence. She reported also that an attack of fever came on a day or two after her delivery, which from her description was probably of the irritative or typhoid type, and from which she recovered very slowly. More or less uterine hemorrhage had continued for the space of nine months, when she was removed to Oxford. Mrs. T. was then labouring under great debility. Her complexion was blanched, puffy, and opaque; the discharge from the vagina was sanguineous, for the most part liquid, but occasionally mixed with coagula. She had now and then been troubled with bearing-down sensations, but had not suffered pain in any remarkable degree. As there was no abatement of the hemorrhage after a short course of tonics with astringent injections, a manual examination was proposed, and acceded to. The result of this was the discovery of a tumour in the vagina, about two inches and a half in length, and an inch and a quarter in the transverse diameter, broader at its inferior extremity, and slightly tapering towards the point of its attachment. Its texture was firm and incompressible between the fingers—its surface smooth, equable, and insensible when pressed, or irritated by the points of the fingers. The os uteri embraced its upper part, and was without its usual tuberculated feel. The origin of the tumour was evidently above the mouth of the womb, but at what distance it was difficult to determine. The finger was stopped in its progress at the pubic and lateral parts, but proceeded higher up posteriorly. My father, who has had considerable experience as an accoucheur, and who was one of those who examined the tumour, affirmed that the cul de sac was entire towards the sacrum, as well as in the other directions. The question was now, whether the tumour was an inverted Uterus or a Polypus. In favour of the supposition that the latter was its real nature, were adduced its pyriform shape, its insensibility, the great degree of hemorrhage which had taken place, and the doubt which

some entertained of there being any attachment of the neck to the posterior part of the uterus. On the other hand, the probability of its being a case of Inversion, was founded on the history of the labour, the equable surface of the tumour, its incompressibility, the cul de sac at its superior extremity, and on the size of the tumour having been found in repeated examinations, to have been stationary during several weeks. The opinions of the medical men were at variance; I inclined myself, though not without some degree of hesitation, and my father still more decidedly, to the latter supposition.

While the uncertainty was such, the mode of treatment was likewise in suspense. But in the midst of our doubts and deliberations, the patient improved somewhat in health and strength, and returned to the country. Nothing more was heard of her till the latter end of last October, when she again visited Oxford. She stated that there had been very little alteration in the condition of her health, during her absence; the discharge from the vagina having persevered more or less, sometimes changing from the sanguineous character, to that of a whitish secretion of various consistence, and sometimes omitting the space of a fortnight, but never observing any regular periodicity. Her general appearance was much the same, excepting a little more fulness or plumpness of habit, while the countenance wore the same exsanguine aspect. The appetite and the alvine function had nothing remarkable. The pulse was quick, and as might be expected, weak and irritable. We found by examination of the vagina, that the tumour was decidedly lower down, and, which was important, the os tincæ also. The texture of the tumour gave the same impression to the touch, and with regard to bulk it was a little shorter but thicker. The lips of the os uteri were thin, and the point of the finger was prevented from penetrating higher than a quarter of an inch, by the now unequivocal continuity between the circumference of the neck of the tumour, and the inner surface of the mouth of the womb. Those who examined, namely, Mr. Webb, my father, and myself, coincided in the belief, that the poor woman was suffering under Inversion of the Uterus.

The question reverted, with this view of the case, as to what mode of treatment should be pursued. Should we endeavour by tonics and regimen to support the constitution under the debilitating effects of the complaint, and trust to nature to produce a gradual diminution in the determination of blood to the part affected? or should we set about some means of removing the tumour? The patient and her husband were indescribably anxious that something should be attempted, and at

any risk, as life under the existing circumstances was miserable. Mr. Webb proposed that the advice of two eminent accoucheurs, with whom he was acquainted, should be taken into consideration; and a statement of the case much the same as above, except that it did not contain our decision on the diagnosis, was transmitted. We received in reply, no opinion as to the nature of the tumour, but were referred to a case in most respects very analogous, and which we had before compared in the chapter on Polypus Uteri in the late admirable work of the lamented Dr. Gooch.* It will be remembered that the case here alluded to was treated successfully by ligature. After taking all the circumstances into deep consideration, and after repeatedly assuring the patient and her friends, of the danger of the operation, it was determined to effect the removal of the tumour by ligature.

Accordingly, after the rectum had been well cleared out by an enema, Mr. Webb, in the presence of my father, Mr. Price, and myself, succeeded in surrounding the neck of the tumour, within the os tinæ, with a piece of strong whip-cord, by means of Dr. Gooch's very convenient instrument. On drawing the ligature tight, we were agreeably surprised that the patient uttered no expression of pain; on being questioned she said that she felt "something tight" but no pain. A kind of nervous thrill came on, and the pulse was very hurried, apparently from mental agitation, as she had entertained great apprehension respecting the suffering which the operation would produce. A large dose of Batley's preparation of Opium was administered, and after having secured the canula to the thigh, for the sake of obvious precaution, we withdrew much better pleased than our anticipations had led us to expect. Mr. Webb informed me the next day, that he had been called to Mrs. Tidmarsh a few hours after we left, in consequence of acute pain having been felt in the neighbourhood of the tumour. It had been agreed to treat her as much as possible in the same manner as the case related by Dr. Gooch, and opium was therefore given, which, together with fomentations had the effect of quieting the pain. She was also ordered to take salines every four or five hours. I visited her and was glad to find her free from suffering. There was scarcely any tenderness on pressure at the lower part of the abdomen. The pulse was frequent and irritable, the countenance tolerably placid, and the tongue clean and moist. On the third day the ligature was tightened without the production of pain at the time, though it came on, as before, two or three hours afterwards, and was again subdued

* The reader will find the case transcribed at the conclusion of this paper.

by opium. The discharge was dreadfully fetid, though the vagina was continually washed out with injections. The ligature was tightened every other day, and the general health continued much the same. The spirits were cheerful and the appetite good. She was allowed to take wine, when oppressed by faintness, which indeed frequently came over her. On the 13th day the ligature when tightened broke, but another was immediately applied. On the 15th it came away, and Mr. Webb extracted the tumour from the vagina with his fingers.

An inspection of the tumour confirmed the opinion which we had formed of its structure. At the narrow extremity there was a basin-shaped cavity, lined with smooth shining membrane, evidently a part of the peritoneal coat, and at the broader end, which of course was the inverted fundus, we perceived the orifices of the Fallopian tubes. If any additional evidence was necessary, it was to be found in the complicated fibrous texture visible where an incision had been made.

After the extirpation of the uterus, although the poor woman for three or four days reported herself free from pain, and the tenderness of the abdomen was but slight, while the discharge from the vagina had nearly ceased, and there was not that general improvement which we were so anxious to see, her pulse seldom or never fell below 100. There was great faintness on attempting to sit up in bed, and disinclination to solid food. When I saw her on the 5th day after the removal of the tumour, I felt considerable apprehension. The face was sallow and tumid, and, although she spoke cheerfully, it was evidently with effort—and there was moreover a restless moving of the eye, which betokened evil. The pulse was hurried, vibratory, and small; and the breathing very anxious. She did not complain of pain, but the abdomen was swollen. I applied my hand to the præcordia, and perceived a tumultuous palpitation, the thrill of which extended even to the right side. Mr. Webb saw her in the evening, and like myself was convinced that mischief was going on. There did not appear any indication of treatment, beyond the administration of an anodyne. Wine she had taken in moderate quantity for some days. In the night Mr. Webb was called up and found his patient suffering intense agony over the whole abdomen; it had come on suddenly three hours before the attendants sent for him. The belly was tense and exquisitely tender to the touch, and the pulse rapid and sharp, forty leeches, fomentations, and poultices were ordered to be applied, and an enema to be administered, but no relief ensued. Rigors followed, and in the middle of the 6th day the poor woman expired.

An inspection of the body took place on the next day; Dr. Kidd, Mr. Webb, his assistant Mr. Price, my father, and myself being present. The abdominal parietes were folded back, and the pubic portion of the pelvis sawn out, for greater convenience in viewing the viscera contained in the latter cavity. Purulent fluid, to the amount of a quart, was ladled out of the peritoneal sac. The inferior edge of the great omentum adhered to the upper surface of the bladder, and as it was lifted up, little streams of pus flowed from numbers of cells and depots, formed by adhesions between the omentum, and the folds of the intestines. There was no evident vascularity except in the pelvic portion of the peritoneum. I introduced the forefinger of one hand into the vagina, and passed the same finger of the other down into the pelvis; the points of my fingers met between the rectum and the bladder, whence it was manifest that there was a free communication between that passage, and the abdominal cavity. The bladder and vagina were carefully dissected out for more close inspection. At the inner extremity of the canal, there was a circular aperture capable of admitting the finger, and which consisted of the ring of the os uteri, and about three lines of the cervix. Its margin had a dark hue, and we were unable to perceive any attempt at adhesive inflammation. Close upon it were seen the ovaries, and remains of the Fallopian Tubes. The ovaries were of the usual appearance and size. The other viscera, both abdominal and thoracic, were successively examined, but nothing was found particularly deserving of mention, except that the substance of the liver was of a pale buffish colour, the spleen much enlarged, and the heart in a state of hypertrophy without any other alteration of structure. The head was not examined.

REMARKS.

Denman in his Section on Polypi, very cursorily observes, "We must distinguish a polypus from an inverted uterus, for there is in some respects a resemblance between the two complaints." That this very excellent advice cannot always be very easily followed, the foregoing case will testify.

Mr. Burns says that Inversion may be distinguished from Polypus "by attending to the history, and by careful examination." And after having observed that "in complete inversion there may be a rugous state or corrugation at the top, but can be no distinct orifice, as in polypus," he says, "An incomplete inversion is more apt to be mistaken, for the finger can be passed within the os uteri, and along what appears to be the stalk or pedicle of a polypus; but this root is thicker than in the polypus, and the os uteri is somewhat

thickened and projecting." Mr. B. enumerates as characteristic of Polypus, its capability of being rolled, its bulging extremity, its smaller pedicle, and its being encircled by the os uteri as by a ring.

Dr. Gooch says "The distinguishing marks (of Inversion) are the time of its first appearance which must have been immediately after delivery, and its sensibility."

Let us apply these different modes of distinction to the case before us. It is obvious that, as the accident of Inversion is physically impossible, during the unimpregnated state of the uterus, the history of the case is particularly worthy of investigation. But an accurate account cannot often be obtained for two reasons. In the first place, the non-professional obstetrician, (and such only can we suppose the case at all likely to befall) will not think it necessary to divulge, if she is aware of the awkward circumstance; and in the second place we cannot depend altogether on the correctness of the patient's report, inasmuch as it is a matter of feeling, and of feeling at an occasion of more than ordinary agitation and confusion. Take for instance our patient, who was at the time when delivered a young woman of sixteen; the confinement was her first; and she reported that she felt great pain when the placenta was extracted, and that it seemed to be drawn away forcibly. All this might have been experienced, if the practitioner had introduced his hand, and separated an adherent placenta. Reference to the person who attended her could not be made. Hence it appears that we cannot depend on the history alone, though it must still be looked on as an important auxiliary sign.

Mr Burns has well observed that incompleteness of the inversion renders the diagnosis obscure, and the reader will have observed that in Mrs. Tidmarsh's case the diagnosis brightened, as the inversion became more perfect; for at last the os tinæ alone remained uninverted. But it must be remembered that even this state may be confounded with a polypus growing from the internal circumference of the mouth.

The narrow neck, said to be characteristic of Polypus, is not invariable, for Denman speaks of Polypi, "arising from the substance of the part with a basis as large or larger than the excrescence." Nor on the other hand is the neck of an inverted uterus always thick, as we shall see directly.

The uncertainty of the other general distinguishing characters of Polypus, is manifested in the following sentence, which precedes the case narrated by Dr. Gooch. "In the smoothness of its surface, the soundness of its body, the narrowness of its neck, and its being completely encircled by the orifice of the uterus; it sometimes exactly resembles polypus of the fundus." And to this we can add the case under consideration, where the characters were similar, except with regard to the neck which could not be described as narrow, though by no means remarkably thick.

Both Dr. Gooch and Mr. Burns consider the sensibility of the uterus to be distinctive; and yet Mrs. T. though repeatedly questioned, averred that she felt no pain during the many fingerings

and squeezings which her uterus underwent. We did not irritate with a probe, but it will be recollected that no suffering was felt or expressed even when a tight ligature was applied. It is true that she felt pain when the tumour was moved about, but as Mr. Burns very properly remarks, this might happen if it were a polypus, from the necessary movement of the womb at the same time.

With "regard to the capability of being rolled" as peculiar to Polypus, it may be mentioned that the tumour in Mrs. T.'s case was very moveable.

Of the marks then, which these justly celebrated authors have pointed out, it appears that not one is altogether unequivocal. But for this case which has occurred to me, the presence or absence of sensibility would afford the most conclusive evidence. When it is present indeed, the question is brought almost to a certainty; but as we have seen, it may be wanting, and the tumour not of the nature of Polypus.

On what ground then it may be asked, did our final judgment rest? When I introduced my finger into the vagina on the patient's second visit to Oxford, and discovered that the tumour during the period of almost a twelvemonth, instead of having increased in size, had rather if any thing diminished, and was unaltered in texture, I was quite convinced that my former conjecture had been correct, and the same circumstance had a similar influence on the opinions of Mr. Webb and my father. As a still further confirmation we had the continuity of surface between the inner membrane of the whole circumference of the os uteri, and the extremity of the tumour; which continuity, though at that time existing more with the cervix, my father had perceived when the inversion was less complete, and it was evident that this could not be occasioned by a polypus of the description before adverted to, because it had been felt at a certain distance above the extent of the os uteri. On the whole therefore, if on a future occasion I should discover in the vagina of a woman, who, as far as could be collected, had suffered violence in the extraction of the placenta, a bulbiform tumour, encircled by the margin of the os uteri, and sensible, I should feel satisfied that it was an inverted uterus; but even though it were insensible, if it remained unaltered for several months, and a cul de sac were perceptible between that surface of the tumour which the os uteri encloses, and the lips of the latter, as far as I can see at present, I should likewise feel no hesitation in pronouncing it to be of that nature, though at the same time it would be rashness to say, that no other complications could occur to embarrass the judgment.

With regard to the operation, no one will hesitate to think that the operation was warrantable. Successful cases have often occurred besides the one so frequently referred to above; and the circumstances of the patient's health were such, that the choice seemed death from exhaustion, or the risk of extirpation. Of course in Mrs. T.'s case, as in many others which demand serious operations, the very condition of health which renders the interference of art so desirable, at the same time renders the attempt

less likely to be successful. The only remark which offers itself on the actual operation, is whether it would not be advisable in another instance to fix the ligature at a lower point of the tumour, so that the peritoneal coat might not be included. This was suggested to me by the examination of the tumour, in which I observed that the depth of the cavity lined by that membrane, was not more than a third of an inch.

It is deserving of notice that no pain was felt, till some little time after the application, or successive tightenings of the ligature, and which I can only account for, by supposing that the pain arose not so much from compression of the uterine substance, as from that of the surfaces of the peritoneal covering, and the consequent inducement or aggravation of inflammation in that part. That inflammation spread extensively over the peritoneum, was abundantly testified by the dissection, but its progress, (as is not unusual with peritonitis) was very insidious.

The only violent attack of pain, and pain diffused over the whole abdomen, which took place a few hours before death, must, I should conjecture, be attributed to the sudden escape of pus which had been before confined in the pelvic, and hypogastric regions, by the artificial sacs formed of agglutinated folds of intestines and omentum.

In conclusion, a fact must be mentioned, which was not discovered till after the patient's decease, and which was, that she had been in the habit of drinking brandy freely for some time, to relieve the distressing sensations of faintness and debility attendant on her disorder, and that after the operation she had sometimes taken nearly a pint in the twenty-four hours. It is unnecessary to add that this indulgence must, to say the least, have contributed in no small measure to the progress and extension of the inflammation.

The Case related by Dr. Gooch.

“The first time I saw the patient was in consultation with Dr. Clarke and Dr. Henry Davies; she had been delivered some months before at St. Omer, and immediately after the removal of the placenta, which had been extracted with some violence, a tumour had been felt projecting from the uterus into the vagina, since which she had not only had no hemorrhage, but had not even ordinary menstruation. When we examined the tumour, we found it about the size of a small apple with a smooth surface, a somewhat narrow stalk, which was completely encircled by the orifice of the uterus exactly like a polypus, but its quick sensibility to touch, and the circumstances under which it made its first appearance, inclined us to believe that it was an inverted uterus, and not to recommend its removal, particularly as she was losing no blood, and her health was sustaining no injury from it. She returned to the continent, and I did not see her again for two years, when she again came to London, to place herself under the care of Dr. Granville, who had recommended her to submit to an attempt to revert it, and I now saw her in consultation with the Doctor. Since my former interview with

her, she had become subject to frequent and profuse hemorrhages, which had bleached her face and broken her health, and it now became an urgent object to afford her relief even at some risk. We agreed, therefore, that the attempt should be made to revert the tumour, but if this failed, which appeared most likely, we proposed to her husband the removal of the tumour by ligature, stating to him that such an operation had been done successfully, but that it was attended with considerable risk. This, both he and the patient were willing to incur; the attempt at reduction failed, but before applying the ligature, her former attendants, Dr. Clarke, and Dr. Henry Davies, were consulted, and all of us agreeing to recommend the operation, the ligature was applied by Dr. Clarke; it was tightened every other day, and each day occasioned so much pain as to require an opiate to quiet it. At length, on the fourteenth day, both instrument and tumour came away; there were times when I had a strong suspicion that it was a polypus, but a sight of the tumour proved that it was the fundus of the uterus, for it was a hollow cup, the size of a small apple, in the cavity of which could be seen the Fallopian Tubes. Excepting the pain, and some vomiting, the patient had no bad symptoms during the cure, and several months afterwards her husband called on me to say she was quite well."

ART. III.—*On Chronic Disease of the Stomach, with Two Cases and the appearances on dissection.* By THOMAS SANDWITH, Esq. M.R.C.S.L., Beverley.

UNDER the term *Cancer* have been included many dissimilar diseases of the stomach, as chronic inflammation of the Pylorus, and Fungus hæmatodes. Baillie makes no distinction between the carcinomatous and fungoid diseases of this part; indeed his description of Cancer of the Pylorus is a blending of the characters common to both. Afterwards however, on the authority of Portal (Anat. Med. tom. 5. p. 205), he admits the existence of Fungus as a distinct species; observing at the same time he himself had never seen it in this situation.* When we consider that Fungus hæmatodes of the Pylorus is unattended with pain; and that the pain of Cancer is severe and lancinating, it seems wonderful that these diseases should have ever been confounded.

Dr. Pemberton manifests a similar confusion of ideas, and mentions a case to show that "a large schirrus of the stomach near the pylorus with an open Cancer in one part of it,"† ex-

* Morbid Anat. p. 151. † On the Abdominal Viscera, p. 127.

isted for a length of time without a symptom during life to mark its nature. He also refers to a case of the same kind in De Haen (vol. iv. p. 162). The description of Cancer of the stomach in the excellent Manual of Martinet, is in truth a description of Fungus hæmatodes. On the subject indeed of Cancer altogether there is a singular want of precision in the opinions of many of the French Pathologists. Breschet and Ferrus confound with Cancer, the Fungus hæmatodes of Wardrop, the Medullary Sarcoma of Abernethy, and the Encephaloid tumours of Laennec.*

We are indebted to Andral for the first attempt to dissipate the obscurity that has hitherto prevailed. In his recent laborious work on the diseases of the abdomen, several cases of Fungus hæmatodes are related, in the greater number of which pain, denoting disease of the stomach, was altogether absent, but the vomiting and emaciation and exsanguine appearance of the patient, together with the occasional detection of a hardness in the situation of the smaller extremity of the stomach, rendered it difficult not to perceive the nature of the disease. This author is of opinion, that no symptoms exist, which can in the living body point out the diagnosis between this disease and chronic inflammation of the stomach.

In the latter opinion he is borne out by the experience of Boisseau.† Our own countryman, Dr. Seymour has published a valuable communication on abdominal tumours in the Medico-Chir. Transactions, in which the distinction between Cancer and Fungus hæmatodes of the stomach is clearly established. The two following cases appear to confirm the views of these eminent pathologists.

1. *Case of chronic gastritis with ulceration of the Pylorus.*

For a period of more than three years, Mr. S. æt. 25, was more or less an invalid. His disorder commenced in town, and was originally confined to the stomach; the symptoms being, according to his description, those of chronic *Gastritis mucosa*. He said he suffered from a burning heat in the epigastrium, but no pain; sour and acrid eructations, flatulence, loss of appetite, frequent nausea, and occasional vomiting of a watery fluid. The disease was considered to be dyspeptic, or, in vulgar language, “a bilious affection;” and, agreeably with this notion, the blue-pill, tonic medicines, and a diet con-

* Dict. de Med. tom iv. p. 139 † Med. Chirurg. Trans. vol. xiv. p. 221.

‡ Nosographie Organique, tom. 1, p. 216.

sisting of animal food, &c. were recommended; a method of treatment now happily yielding to the influence of a better pathology.

When he put himself under my care, more than a year had elapsed, but he complained of the same distressing symptoms. Still there was no pain even on pressure. He received much benefit from mild diet, milk and lime water, a small bleeding or two, the external use of Jenner's Ointment, and medicines to keep up a regular action of the bowels; and returned to town in somewhat better health. His complaint, however, recurred in an aggravated form, and after three months he again visited the country.

His appearance was now sadly changed. There was great emaciation, and the complexion was pale and exsanguine. The food was regularly rejected some hours after eating, along with a considerable quantity of mucus; and opening medicines in all forms, and of the most active description, failed to open the bowels. No remedies availed to arrest the progress of the disease; emaciation and debility went on encreasing; the ankles became œdematous, and the abdomen so much enlarged, that but for the activity of the kidneys, his disease might have been mistaken for Ascites. Now and then there were slight paroxysms of fever. The bowels continued obstinately costive, and were only slightly relieved by the daily use of injections. Meanwhile he made no complaint of pain, and his appetite was good. He eat heartily indeed, and knowing that whatever was the quality of his food, it would in due time be certainly rejected; he indulged in the most incongruous articles of diet. for some months before his death he was unable to leave his bed, and vomited frequently large quantities of a coffee-coloured fluid.

Autopsy.—On opening the abdomen, the entire cavity seemed to be occupied by the stomach, which was dilated into an enormous sac, capable of holding more than a gallon. It was found to contain about three quarts of a coffee-coloured fluid. Its parietes were thin, except near the pylorus, which was thickened, somewhat indurated, and from ulceration uneven. This portion of the stomach had a peculiar brown appearance, and the vessels were seen loaded with a coffee-coloured matter, which oozed out, and could be squeezed from their ulcerated extremities.

The intestines were greatly contracted, and the caliber of the colon was so small, that the contents of its sacculi resembled small pellets of sheep's dung.

2. *Case of Fungus Hæmatodes of the Pylorus.*

The history of this case embraces a period of more than two years and a half. The complaint began in Sept. 1827, when, in consequence of continued grief and anxiety of mind, Mrs. H., æt. 62, was attacked with a diarrhæa, which assumed a chronic form. My assistance was not required until it had continued several weeks. The discharges were thin and watery, and unattended with pain or fever; and except the weakness attendant on such a disorder, and considerable emaciation, there was no other symptom of disease. Although peculiarly obstinate, it eventually yielded to remedies.

In the spring of the year ensuing (March, 1828), the diarrhæa returned with catarrhal symptoms. It was again relieved, and although she remained in a state of considerable emaciation, my patient had no serious disease until April, 1829. She then complained of disorder of the stomach, of which the symptoms were frequent vomiting of a watery fluid, black water as she called it (pyrosis), a sense of sinking and weakness of the stomach, general debility and emaciation; but no pain or fever. The ancles were slightly œdematous, but there was no diminution of the secretion of the kidneys. It is unnecessary to detail the method of treatment—suffice it to say, it had the desired effect of relieving the symptoms.

During the summer months her health was tolerable, so far so at least as not to require medical assistance; but in the Autumn (Sept. 1829), the disorder of the stomach returned in a more aggravated form. She now regularly vomited some hours after eating; and the matter rejected, besides the ingesta, consisted of a material resembling liquid mud. The bowels were not very irregular, but the fœces were slate-coloured. She still made no complaint of pain in the region of the stomach, but deep pressure occasioned some uneasiness; and there was an indistinct feeling of hardness a little above the navel, towards the right side, apparently in the situation of the pylorus; indeed there could be no doubt of the existence of an organic disease of the pyloric portion of the stomach. The emaciation was extreme, the skin loose and shrivelled, of a dirty yellowish colour; and the complexion sallow and transparent. The pulse was feeble, but slow and regular, tongue clean, and there was no fever. As no rational expectation of her recovery could now be entertained, the treatment was simply palliative; consisting for the most part of milk diet, and anti-emetic remedies.

About the middle of October, she was unable from weakness to leave her bed, and in this stage of the disease was seen by

my friend, Dr. F. Leighton. It was agreed in consultation, that she should be kept in a recumbent posture; the diet to consist of milk alone, or with the addition of jelly prepared from the *Lichen Islandicus*, and the bowels to be opened by injections. A blister was applied to the epigastrium, and five drops of the nitric acid were ordered to be given every four hours. For about three weeks little or no advantage was gained, and her dissolution was daily expected. At the end of this time, however, the vomiting ceased almost entirely, and the stools became natural. She took the milk and jelly with appetite, and only complained of the privation of more substantial food. Her countenance became cheerful, but still the emaciation went on encreasing. Injections of beef tea were now recommended. In this condition she continued the next three months, having about once a week or fortnight an attack of vomiting, or a return of diarrhæa preceded by a rigor and a paroxysm of fever. Once also one of the legs became œdematous, the swelling being preceded by pain and increased heat. Latterly she was able to leave her bed some hours every day, and indulged in a somewhat greater latitude in articles of diet; until at length a colliquative diarrhæa of not unnaturally coloured, but very offensive discharges came on, and a week afterwards she expired.

Autopsy.—The cadaver was emaciated to the utmost degree. A tumour about the size of an orange was seen through the integuments, above the navel; a little to the right side. On opening the abdomen the stomach was found greatly distended, and contained a considerable quantity of a coffee-coloured fluid. The larger extremity was thin as paper, denuded in places of the mucous lining, the remainder of which was white and softened, and the whole so tender, that it gave way to the slightest handling. The pyloric portion was converted into a solid tumour, pale and hard. The sub-mucous coat of the stomach in this situation, was found on division to be thickened to the depth of from half an inch to an inch, and of great hardness; white bands running across. Pale reddish fungi covered the mucous surface, corresponding in appearance exactly to those depicted in Dr. Seymour's plate. When cut into, these fungi consisted of a soft whitish matter. The liver and other viscera appeared pale, but not otherwise diseased.

ART. IV.—*On permanent involuntary Contraction of the Muscles.* By SAMUEL SMITH, Esq., Surgeon to the Leeds General Infirmary.

IT is not uncommon in surgical practice to meet with cases, where certain muscles have remained for a great length of time rigidly and permanently contracted. This state sometimes results from disease in the nerve distributed to the affected muscles; occasionally it is produced by the muscles having their points of attachment unduly and unnaturally approximated for a considerable length of time—as in unreduced dislocations—in the treatment of fracture, &c.; and, in some cases, the precise cause cannot be ascertained.

When a muscle has long been in this state, it often remains contracted, solely from habit, even after the cause which originally produced it has ceased to operate; and by breaking this habit, relief may generally in a short time be obtained.

There are certain sets of muscles which act as antagonists to each other, as for example the flexors and extensors of the arm. The contraction of either of these sets of muscles is always accompanied with a simultaneous relaxation of the other. Thus, if the arm be powerfully flexed by the biceps, and the extensors brought into action, the extensors no sooner act than the biceps becomes relaxed.

Suppose then the flexors of the arm to have been sometime in a state of permanent involuntary contraction; if the limb, by gentle force be put in the position of perfect extension, the flexors become relaxed, and by maintaining this position a certain length of time, this unnatural *habit of involuntary contraction* which has been acquired in the flexors, may be broken or destroyed. To prove the success which may be expected to follow this plan of treatment, the following cases are selected from many others which have come under my notice.

Mary Leak, aged 25, a stout robust woman from the country, was admitted a patient of the Infirmary under my care, July 30, 1820. She had been fifteen months under treatment, suffering much during the whole of this time from permanent contraction of the quadriceps extensor femoris, the whole of which muscle was in an extremely rigid state. She walked without pain, but an inability to bend the right knee in the least degree, gave her the appearance of having a wooden leg. The warm-bath, frictions, and many other means had been persevered in for a great length of time, without producing the least effect upon her complaint. On the day succeeding her admission, I placed her on the bed on her left

side, and taking hold of the ankle with my right hand, grasping the thigh with my left, I succeeded in drawing the heel and pressing it against the buttock, thus producing a perfect flexion of the limb. It is necessary to explain that in accomplishing this, recourse was had more to art and cunning, than to force. It was gratifying to find that the rigid muscles had become perfectly relaxed, and in order to destroy the tendency to reaction, two leather straps with buckles were placed tight round the upper part of the thigh and ankle, binding the limb in this position, the heel touching the buttock.

She was ordered to remain in bed bound in this manner until my visit on the following day. The relief was immediate and complete. Upon being released next day, it was found that the muscles which had been for so long a period contracted, were quite relaxed; and not only so, but the tendency to involuntary contraction was destroyed. Suspecting, however, it might return, she remained an in-patient ten days: no return of the complaint took place; she was made an out-patient, and appeared as such August 30. She was perfectly well, and had suffered no relapse.

October 20, 1826. William Holdin, aged 36, admitted a patient of the Infirmary, under my care, on account of the right masseter muscle being permanently contracted. He has been fourteen months incapable of opening his mouth more than to admit the handle of a leaden spoon. Upon introducing the finger within the cheek, and the thumb without, the muscle can be grasped, and in hardness it resembles bone rather than muscle. He has been upwards of a year unable to close the right eye. He was directed to wear a wooden wedge between the teeth so as gradually to open the mouth, and thus gain upon the contracted muscle. No medical treatment was adopted, and in the course of a week or ten days the mouth could be opened upwards of an inch; the masseter muscle had become relaxed and soft, and he was so much relieved that at his own particular wish he went out, November 10, in order that he might labour for his family; he was, however, directed to continue the use of the wooden wedge for some time. He was able to take common diet, which had materially improved his strength, having previously lived a long time upon spoon-meat, from his inability to open the mouth: he could also close the eye, which he had not done before for upwards of a year.

November 2, 1829. Miss H., a young lady, residing about twenty miles from Leeds, had the misfortune, nine weeks ago, to fall and sprain her wrist, for the relief of which leeches and the usual applications were had recourse to, under the direction of a very respectable practitioner; in a few days she was better

of the ſprain, but the ring and little finger were permanently contracted, and ſhe had loſt the power of extending them: to relieve this affection various means were had recourse to without effect: ſhe then came to Leeds to place herſelf under my care. Finding ſhe had conſiderable pain upon preſſure, in the courſe of the ulnar nerve, I thought it adviſable previous to extending the fingers, to apply a ſmall bliſter (three inches long and one broad) above the wiſt, and in the direction of the nerve. The day following, the fingers were gently extended; dreſſings applied to the bliſter, a compreſs of lint, and a ſplint reaching from the extremity of the fingers a little beyond the wiſt, was firmly ſecured by a bandage to keep them extended.

Next day they were removed, the contraction of the flexors had ceaſed, ſhe had the perfect uſe of her hand, and has ſuffered no relapſe up to the preſent time (June, 1830).

ART. V.—*On the Treatment of Ptoſis by Operation.* By R. T. HUNT, Aſſiſtant Surgeon to the Manchester Inſtitution for curing Diſeaſes of the Eye, &c.

THE uſual operation for the relief of Ptoſis, or falling of the upper eyelid, which conſiſts in removing a fold of the integument, does not appear to be generally followed by a ſucceſſful reſult. The reaſon of this failure is not difficult of diſcovery. The mere ſhortening of the eyelid can only remedy the evil when it depends upon the lengthened, and conſequently relaxed ſtate of the lid, however produced; not when it is the reſult of Paralyſis, or injury of the Levator Palpebræ.

When the ſtructures composing this organ have ſuffered diſtention for a conſiderable time, owing either to inflammatory depoſition, or to preſſure from ſome orbital tumour, or enlargement of the globe, the integuments in particular ſeem never to regain that degree of elasticity which they before poſſeſſed, but remain ever after in a flaccid ſtate, which although not ſo obſervable as the relaxed condition of the abdominal integuments occurring from tenſion during repeated uterogeaſtation, ſtill bears a direct analogy to it. This is not the caſe when the eyelid falls in conſequence of Paralyſis, or injury of the Levator. The integuments are, in theſe inſtances, rather ſhrunk than relaxed like other parts when long affected by Paralyſis; and if much of the Levator be deſtroyed the lid appears conſiderably leſſened. The ſame operation cannot, therefore, be admiſſible in both deſcriptions of caſes. That

method to which I have before alluded, and which becomes efficient by merely abridging the quantity of skin, can only be applicable where the lengthening, and relaxation of the lid are the only causes which prevent its being properly raised. And such cases can always be readily distinguished by taking a fold of the palpebral integument between the finger and thumb, and desiring the patient to open his eye, an action which with this assistance he will easily perform. Nor can the same operation be available in cases of Ptosis caused by Paralysis, or injury of the Levator, when we consider that shortening the eyelid cannot restore to this muscle the power which it has entirely lost. For if the muscle is no longer capable of contracting, of what utility can it be, to place the eyelid within its sphere of action?

A close attention to the structure of the parts concerned, and their healthy functions, may however, lead to a more rational mode of operating in these latter instances. In the action of raising the eyelid, the Levator Palpebræ is not the only muscle brought into play. The anterior portion of the Occipito-frontalis also considerably contributes to this effect, by elevating the superciliary integuments into which it is inserted. These muscles act so much in concert, that it is almost impossible to draw the eyebrow upwards, whilst the eye remains perfectly shut, and equally difficult to depress the eyebrow, whilst the eye remains wide open. And when we reflect that the origin of the Levator is situated at the very extremity of the orbit, and that it is inserted into the Tarsus, a part so easily moved, it becomes evident that, unless this muscle's action were restrained by some other power, the tarsal margin would be drawn too far into the orbit. The anterior fibres of the Occipito-frontalis which are so inserted into the superciliary integument, as when in action, to stretch the upper part of the skin of the eyelid, constitute this power; and it is with reference to this combination of muscular actions, that the following method of operating is recommended.

The operation is performed by dissecting off a fold of integument from the eyelid, and the difference from the usual way of proceeding, consists in the portion removed. The upper incision is made immediately below the line of hairs forming the eyebrow, and extends each way, to a point, opposite the commissures of the eyelids. In making the lower incision no precise direction can be given. It should approach within a short distance of the tarsal margin, varying in the extent of the portion included between the two incisions, according to the greater or less degree of relaxation of the skin, which is different in any two individuals, and it should meet the

upper incision at both extremities. When the intervening portion has been detached, the divided edges should be accurately united by, at least, three sutures, and the wound dressed in the usual manner.

The effect produced, when adhesion is perfected, is the attachment of the eyelid to that portion of the skin of the eyebrow, upon which the Occipito-frontalis acts, and by means of this attachment, substituting the action of this muscle in raising the eyelid, for that of the Levator, which is no longer capable of doing so.

On the first view of this mode of operating, the deformity likely to be produced by the removal of so large a portion of skin, in such a conspicuous situation, or, the injury to the motion of the eyelid, may be urged by some, as reasons against its adoption. But to both these objections the following case, in consequence of which the foregoing observations were made, will be an answer.

In removing a large, and deeply-seated Hydatid tumour from the left orbit of James Garside, a patient of the Eye Institution, about three years since; owing to the connexion of the Levator palpebræ with the diseased mass, that muscle was so much injured that, after the patient had perfectly recovered in every other respect, what then appeared an incurable falling of the eyelid remained. Anxious to remedy this evil, (as the man possessed perfect vision, upon raising the lid with the finger) when all tumefaction of the integuments had entirely disappeared, I removed an elliptical fold of skin, in the usual way. The wound healed well, but although a considerable portion had been included between the incisions, the effect upon the lid was hardly perceptible. The poor man, after waiting for some weeks, was very solicitous to have another portion removed; and it was more in compliance with his desire than from any expectation of further benefit, that I at length consented to repeat the operation. Whilst deliberating on the portion to be removed, it struck me that if it was sufficiently near the eyebrow, the action of the Occipito-frontalis which affects this part of the skin, might also be available for raising the eyelid, and fortunately, the result fully justified the conjecture. The operation was performed as is described above, the wound united by adhesion, and the patient could raise his eyelid to the same extent as that of the other side.

It is also important to observe, that no deformity was produced, and that the eye could be as perfectly closed as before the occurrence of the disease. Nor is this surprising, when we consider, that there still remains the same extent of conjunctiva lining the lid, as before, and that, cicatrices in the

eyelids, those caused by the operations for Entropion, for instance, are, after a short time, barely visible, owing to the peculiar character of the skin in those situations.

It may be well to repeat, that this method of performing the operation applies only to the following cases of Ptoſis, viz.:—those occasioned by loss of power in the Levator, whether attributable to actual destruction of a part of the muscle, or to Paralysis of the nerves supplying it, caused either by injury or disease.

Upon reviewing the subject, this case appears to me of utility, not only as regards the treatment of Ptoſis, but also as proving the possibility, at least in one instance, of so modifying one natural action, as to render it an efficient substitute for another, which has become powerless.

The inosculations of arteries, by means of which, when one trunk becomes impervious, the adjacent branches enlarge so as to compensate for its loss, clearly indicate the power which nature possesses of attaining the same end by different means from those originally in force, in the circulatory system. Why then should not the numerous and different combinations of muscular action, equally afford the means of adapting the powers of which they consist to various circumstances, dependent either upon disease or injury?

ART. VI.—*On the Grinders' Asthma.* By ARNOLD KNIGHT, M. D., Physician to the Sheffield General Infirmary.

(Continued from the First Number.)

IN the former part of this paper I traced out the rise, and progress of the Grinders' Asthma; I stated that it was not known until the division of labour had been introduced into the manufacture of cutlery goods; that soon after this period it began to prevail to such a degree as to excite the attention of the grinders; that immediately after the application of steam to the purposes of grinding, this fatal malady rapidly increased, and that it is at present almost universal amongst those, who have been constantly employed at grinding-wheels worked by steam engines.

I shall now proceed to offer some remarks upon the disease itself, but before doing so, I will refer to a few of the different opinions entertained by several distinguished writers respecting the inhalation of fine dust as a cause of pulmonary disease. Dr. Cullen,* in his Practice of Physic, speaking of consumption

* Cullen's First Lines of the Practice of Physic, § 884.

observes, "Another foundation for Phthisis, analagous as I judge to that of tubercles, is that which occurs to certain artificers, whose employments keep them almost constantly exposed to dust, such as stone cutters, millers, flax dressers, and some others. I have not observed in this country many instances of Phthisis which could be referred to this cause; but from Rammazzini, Morgagni, and some other writers we must conclude such cases to be more frequent in the southern parts of Europe." I have already alluded to a short paper written by Dr. Johnstone, in the *Memoirs of the Medical Society*. In this paper he observes that needle pointers are soon affected with pulmonary complaints, such as cough, and purulent or bloody expectoration—that they gradually waste away, and hardly ever attain the age of forty. He attributes these complaints to the irritation of the lungs caused by inhaling the dust which is composed of fine particles of iron, and stone. Dr. Badham, in his useful little essay on *Bronchitis*, makes no mention of those fatal forms of it, which are induced by grinding. Dr. Cheyne is equally silent on this subject in his valuable remarks on the pathology of the membrane of the Larynx, and Bronchia, although it is probable that this part of the mucous membrane is the original, and principal seat of the Grinders' Asthma. Dr. Alison, writing on *Consumption*, refers to the well-known frequency of this complaint amongst those workmen who are much exposed to irritation of the lungs, particularly such as are in the constant habit of inhaling various fine powders, viz., coal heavers, dressers of flax, and feathers, needle grinders, the workmen in the mill-stone quarries of Waldshut, and the stone masons in Scotland. "I have witnessed," says he, "many melancholy examples of the disease among the latter class at the age of forty or more, and in well made men of apparently vigorous constitutions, and the appearances on dissection have been what I have stated above" (diseased but not tubercular lungs) "and I have reason to believe, that there is hardly an instance of a mason regularly employed in hewing stones in Edinburgh living free from Phthisical symptoms to the age of fifty."*

M. Laennec in his chapter on foreign substances introduced into the Bronchia observes, "Les anciens pathologistes ont regardé les corps étrangers pulverulens qui s'introduisent dans les bronches comme la cause de plusieurs maladies graves de ces canaux, et du tissu pulmonaire lui-même, et, entre autres,

* Alison on Scrofulous Diseases. Transactions of the Edin. Medico-Chirurgical Society, p. 373.

de la phthisic pulmonaire, des productions cretacées du poumon, et des glandes bronchiques, de l' *infarctus* de même nature qui remplit quelquefois un certain nombre de ramifications des bronches, ainsi que des corps ostéo-pétrés qui se développent au milieu du tissu pulmonaire. Cette opinion me paraît tout-à-fait sans fondement. Ou pense que les morbriers, et les lapidaires sont surtout sujets aux productions de ce genre, et en doivent l'origine à la poussière qu'ils avalent nécessairement et qui est formée par le détritüs des pierres qu'ils travaillent, et par les poudres dont ils se servent pour les polir.* M. Laennec's reasoning in support of these opinions is extremely vague and obscure, and he appears to have had little or no opportunity of personally observing the effects of their trade amongst this class of artisans. Dr. Forbes in his excellent translation of Laennec observes on the preceding passage that "there can be no doubt of the correctness of our Author's opinion as far as regards the production of cretaceous matters in the lungs; but it seems hardly to admit of question, that the habitual inhalation of dust of various kinds, is a fruitful source of bronchial inflammation, among various kinds of artisans, and more especially, in this country, needle-grinders, leather dressers, and, I can add from my own experience, *miners*. An immense proportion of the miners in Cornwall are destroyed by chronic bronchitis; one of the principal, though by no means the sole cause of which, I consider to be the inhalation of dust."† Dr. Mason Good,‡ when treating of that species of cough which he denominates "*Bex Sicca*," observes that "mechanics engaged in working on metals, glass, free-stone, or any other material, minute particles of which are apt to fly about, and impregnate the atmosphere, and pass by inhalation into the lungs, should be peculiarly careful to keep their mouths and nostrils covered with a handkerchief. And if the lungs be hereby loaded, and irritated with sharp spicula, and a distressing and chronic cough be excited, all similar labour must be abstained from; the diet be peculiarly light; emetics be frequently administered; and, in the interval, diluting apozems be used copiously, with bland demulcents. And if by these means we can check the irritation for some weeks, or months, the lungs will, by a growing habit of exposure to its cause, cease to be materially affected by it, and the patient may pass through life without much inconvenience. But if hereby we should not be able to succeed, inflammation,

* Laennec *Traité de l' auscultation Médiante*, Ed. 2de. tome I^{er}. fol. 270.

† Forbe's Translation of Laennec, Ed. 2nd, p. 137.

‡ Good's Study of Medicine. Ed. 2nd, vol. i. p. 549

hemorrhage, or phthisis will probably be the result." Again, under the species *Dyspnœa Chronica*, he observes that there is a variety of this affection nearly similar to that variety of *Bex Sicca* just referred to. The cause, and the treatment are the same, and the difference of the symptoms he attributes to a difference of constitution. "Where the lungs," he adds, "are peculiarly irritable, a troublesome cough will ensue from the first, before any considerable quantity of buoyant particles can have entered into the bronchia, but where there is little irritability, no cough demanding particular attention has shewn itself for years; and the lungs, from a habit of exposure to the same influence, have betrayed no uneasiness till they have gradually been transformed into almost a mine or quarry of the material worked upon."* Dr. Hastings in his "Treatise on inflammation of the Mucous Membrane of the lungs" gives several interesting cases of bronchial affections as they prevail among certain classes of artisans in Worcester: these cases bear a very close resemblance to those of the Grinders' Asthma, and as he has recorded the appearances which were found on dissection, I shall avail myself of his observations to supply those defects in the present paper, which result from the almost insuperable prejudice of the grinders against post mortem examinations. I have not had an opportunity of consulting the works of Hecquet, and Ramazzini; they have both of them written on the diseases of artisans.

Those who are to be brought up grinders, usually begin to work when they are about fourteen years old: there are, however, many exceptions to this custom, as the children of grinders are frequently employed in the lighter branches of the trade as early as eight or nine years of age. Such as are predisposed to pulmonary complaints soon begin to experience the injurious effects of grinding; and as at that time of life they are not too old to be put to other trades, they occasionally leave the wheel, and thus preserve both their lives and their health, whilst their more robust companions are sacrificing both. Grinders, who have good constitutions, seldom experience much inconvenience from their trade until they arrive at about twenty years of age: about that time the symptoms of their peculiar complaint begin to steal upon them, their breathing becomes more than usually embarrassed on slight exertions, particularly on going up stairs, or ascending a hill; their shoulders are elevated in order to relieve their constant and encreasing dyspnœa; they stoop forward, and

* Ibidem, 571.

appear to breathe the most comfortably in that posture in which they are accustomed to sit at their work, viz.: with their elbows resting on their knees. Their complexions assume a dirty, muddy appearance; their countenance indicates anxiety; they complain of a sense of tightness across the chest; their voice is rough, and hoarse; their cough loud, and as if the air were driven through wooden tubes: they occasionally expectorate considerable quantities of dust, sometimes mixed up with mucus, at other times in globular or cylindrical masses enveloped in a thin film of mucus. Hæmoptysis frequently occurs; the blood is seldom florid or in large quantities; there is frequently a perceptible thickening about the larynx or trachea, with tenderness and cough on pressure. The expectoration is variable, frequently in small quantities, and frothy; in the more advanced stages, copious, and purulent; it is sometimes of a dusky red colour, and occasionally extremely fetid. The pulse, in the earlier stages, appears sometimes not to correspond with the severity of the disease, as it then frequently ranges from 80 to 90, when the concurrence of other symptoms would lead us to expect that it should beat from 100 to 120: in the advanced stages, as in other cases of Pulmonary Consumption, it is almost uniformly quick. About thirty years of age the dry grinders become incapable of performing their usual labour, the wet grinders are similarly affected about forty. The sense of *fastness* under the sternum now grows very distressing; the lungs feel as if they were choked up with dust; the cough becomes incessant; the expectoration copious, and purulent; and the pulse quick; dropsy, in some form or other, not unfrequently supervenes. Hæmoptysis, inability to lie down, night sweats, colliquative diarrhæa, extreme emaciation, together with all the usual symptoms of Pulmonary Consumption at length carry them off; but not until they have lingered through months, and even years of suffering, incapable of working so as to support either themselves or their families. Such is the usual progress of the Grinders' Asthma. Its course, however, is frequently modified by accidental circumstances. The habits of the grinder, and his daily exposure to wet and cold, subject him to attacks of acute inflammation, particularly in the respiratory organs; hence acute bronchitis, pneumonia, and pleurisy, are complaints of frequent occurrence amongst this class of operatives. These inflammations are, as might be expected, severe, obstinate, dangerous, and intractable. The acute symptoms may generally be subdued, and thus immediate danger be averted; but however great the relief that may be obtained, a complete cure is seldom effected. The

chronic mischief which previously existed, still remains, steadily pursuing its slow but fatal course. Many of these cases would undoubtedly do well, if the patient could follow some other employment; but the observation which Dr. Hastings has made with respect to the leather-dressers of Worcester, is equally applicable to the grinders in Sheffield:—"they are relieved for a time by medicine, but the disease always destroys them if they do not quit their employment;" and this the grinders scarcely ever do. Boys engage in the trade with all that recklessness of consequences which is natural to their time of life. When their apprenticeship has expired, they are as naturally desirous of deriving advantage from the trade which they have spent seven years in learning. When older, and beginning to feel the effects of their employment, they may wish to leave it, but they have now got wives and families, who would be left destitute, if their husbands should cease to work. It might be supposed that they would occasionally endeavour, by labouring hard in the early part of life, to accumulate sufficient property to enable them to give over working at the time when their health usually breaks up. Experience shews that such industry would almost invariably prove fatal.

The treatment of the Grinders' Asthma, which ought to constitute the most interesting part of an essay like the present, is unfortunately the least satisfactory. There can be little hope of curing a complaint so long as the patient continues being exposed to the agency of those causes which originally induced it. The grinder seldom applies for medical advice unless he is too ill to work, and he returns to his employment as soon as he has obtained relief; thus he can never with strict propriety be said to be cured: indeed, when he has been once affected, the remainder of his life can be considered only as "one long disease." As it is only when his sufferings have been aggravated by some accidental cause, or by the results of chronic mischief, that the grinder applies for relief, the medical treatment may be conveniently arranged under the four following heads.

1. When acute inflammation affects the bronchial membrane previously in a healthy state.
2. When acute inflammation affects the bronchial membrane previously in a state of chronic inflammation.
3. When the bronchial membrane is ulcerated.
4. When Pneumonia or Pleurisy supervenes in any of the three preceding stages of the disease.

The Treatment of the Grinders' Asthma in its first stage is simple and obvious. Rest, an emetic, leeches, the antiphlogistic regimens, diaphoretic medicines, mercurial alteratives,

and saline aperients, constitute the whole of the treatment which is generally required. Emetics seem to give relief not only by determining to the surface, and thus relieving the congestion of the mucous membrane, but also by emulging the bronchial tubes, and thus removing foreign, and irritating substances. Patients generally express themselves as relieved by emetics: a scruple of ipecacuanha, with a grain of tartrized antimony has been found, in the writer's practice, to succeed the best. Mercurial alteratives, and saline aperients are generally indicated by the congested state of the chylipoietic viscera. Under this plan of treatment the patient usually returns to his work in ten days or a fortnight.

In the second stage of the disease the attack is more obstinate, and the relief less decided. Leeching and cupping require to be several times repeated: it is necessary to keep up continued counter-irritation on the external fauces and chest by means of blisters, antimonial ointment, and setons. Digitalis and colchicum are usefully prescribed. Mercury, pushed so as slightly to affect the gums, is sometimes found beneficial. When the inflammatory symptoms have subsided, benefit is derived from squills, gum ammoniac, and balsam of capivi. During this stage opium is often indicated, to allay the troublesome irritable cough, and the storax pill is generally given at the Infirmary for this purpose. There is little doubt but many would recover at this period of the disease, if they could leave their employment. During the late war the grinders frequently went into the army, and there regained their health, although it would appear from their report that they had previously suffered some very threatening symptoms. Some of the oldest grinders now living are to be found amongst those who had passed a considerable part of their time in the military service.

In the third, or ulcerated stage, the case is hopeless. Portal has observed that laryngeal, and tracheal Consumptions are not so dangerous as the true Pulmonary Consumption. This remark does not hold good as regards the bronchial affection of the grinders: palliatives alone are found useful. The patients themselves have so little confidence in medical treatment, that they seldom pursue it with steadiness. The latter part of their life is, however, frequently rendered less distressing by the use of opiate pills to procure them sleep; pectoral linctuses to allay the cough; and astringent and absorbent mixtures to check the colliquative diarrhæa. A few years ago they were in the habit of adopting a variety of absurd remedies recommended by ignorant empirics; I am informed they have in a great measure ceased to do so—that they regard their

cases as hopeless, and resign themselves to their fate. It appears to me right that they should be aware that their complaint is incurable, in order that they may be excited to greater exertion in discovering the means of preventing it.

Pleurisy and Pneumonia occurring in grinders, will require to have their general principles of treatment modified according to the different stages of the Grinders' Asthma, on which they have supervened. In the first stage the usual remedies may be vigorously pursued. In the second stage, depletion must be more sparingly used. In the third stage, general bleeding can rarely be adopted.

It appears unnecessary to lengthen this part of the paper by detailing the formulæ in which the different remedies are usually combined; a knowledge of the symptoms, and pathology, would suggest the proper mode of using them; especially as they have not, so far as I know, any specific effect in this disease, but must be prescribed according to their general principles of action. It appears equally unnecessary to detail cases in illustration of the treatment recommended, frequently extending through a period of months and years, and seldom long under the care of the same practitioner, they would be found tedious, incomplete, and unsatisfactory.

The cause, the symptoms, the treatment, and the result of the Grinders' Asthma, leave little doubt as to the precise nature of the disease; still it must be regretted, that its pathology has not been confirmed by that demonstrative evidence which post mortem examinations alone can supply. We are thus compelled to infer the morbid anatomy from the symptoms, instead of explaining the symptoms from the ascertained alterations of structure. The part of the respiratory system to which the particles of dust are first applied; the hoarseness of the voice; the thickening and tenderness about the larynx and trachea; the wheezing, and sense of constriction about the upper part of the sternum; the hoarse, dry cough; the relief obtained from medicines adapted to affections of the bronchial membrane; and the tendency of the disease to end in tracheal Consumption: all these symptoms point out the mucous membrane of the air passages as the original and principal seat of the Grinders' Asthma. So long as the mucous membrane retains its integrity, the grinder experiences little inconvenience from his trade; the irritating particles are either immediately expelled, or are rendered harmless by being inviscated in mucus: long continued irritation, however, lessens its sensibility, and impairs its secretion; then the dust accumulates in the bronchial tubes, and lying in contact with the mucous membrane, not so well defended as formerly, inflames

and thickens it; the mucous tissue being thus permanently thickened, a state of constant dyspnœa is induced. Repeated inflammation produces a varicose state of the blood vessels, slight causes will now produce congestion in them, and consequently paroxysms of increased dyspnœa; this thickened state of the mucous tissue again interferes with the due arterialization of the blood, the blood being thus less stimulating than it ought to be, congestions take place in the heart, the lungs, and the capillaries, hence great prostration of strength, palpitation and dyspnœa on slight exertion—the muddy opacity of the complexion, and the lividity of the lips: hence also passive dilatations of the heart, hæmoptysis, and œdema; the difficulty of distributing the blood through the system is still further increased by the constrained posture in which the grinder works. This morbid state of the respiratory system must strongly predispose it to suffer from the exciting causes of acute bronchitis, pleurisy, and peripneumony; and these acute attacks must in their turn greatly aggravate the previously existing disease. At length, from continued irritation, the mucous membrane becomes ulcerated—the lungs become hepatized, and, where a predisposition existed, tubercles are developed. Is it not probable that the difficulty of expiration, combined with a diseased state of the mucous membrane lining the air cells may, in some instances, induce emphysema of the lungs, and thus ally the grinders' disease more nearly with asthma properly so called? Can the dusky coloured matter occasionally expectorated be caused by the admixture of carbonate of iron? A quantity of dust found in the lungs of a person who had died of the Grinders' Asthma was submitted to chemical examination—no iron could be detected—but there can be no doubt, that the dust inhaled had consisted of fine particles of iron as well as stone. Had the iron, during his long illness, been sufficiently exposed to moisture and carbonic acid to be converted first into an oxyde, and then into a carbonate, and afterwards be expectorated with the mucus, giving it the peculiar color already mentioned? If this conjecture be established, it is probable that the fine particles of stone do more injury to the grinder than the particles of iron.

If these pathological views be correct, we should expect to find on dissection, that the mucous membrane lining the larynx, trachea, or bronchia was thickened, inflamed, and ulcerated; the lungs hepatized, or tubercular, and the heart, more particularly the right side, enlarged. It has already been stated that dust has been found accumulated in the bronchial tubes.

The following interesting post mortem examinations recorded by Dr. Hastings will exemplify the other morbid appearances. The

patients had died of Chronic Bronchitis brought on by the inhalation of dust.

“CASE 8.—Chronic Bronchitis produced by the inhalation of dust.”

DISSECTION.

“On dissection no tubercles were found in the lungs, but their substance was rather more solid than natural. The mucous membrane lining the bronchia was much inflamed, and thickened, and several extensive superficial ulcers were found in it. The bronchia were filled with a purulent fluid mixed with blood. The liver was of a lighter color than natural. The other abdominal viscera were natural. The heart was rather enlarged. The cavities on the right side were more particularly dilated, and contained much more blood than usual.”

“CASES 9 and 10.—Chronic Bronchitis produced by the inhalation of dust.”

DISSECTION.

“The lungs were strongly adherent over their whole surface to the pleura costalis. The mucous membrane of the trachea and bronchia was highly inflamed, and ulcerated. The air cells were filled with mucus mixed with pus. The substance of the lungs was much gorged with blood: no tubercles nor vomicae were discovered.

“The heart was enlarged, but in other respects it was healthy. The liver looked healthy.—On examining its concave surface an abscess was found in its substance near the situation of the gall bladder, containing about a table spoonful of highly fetid pus. The other viscera were not diseased.”

“CASE 11.—Chronic Bronchitis brought on by inhalation of dust, producing tubercles in the substance of the lungs.”

DISSECTION.

“The body was examined, and many tubercles were found in the substance of the lungs, some of which had suppurated. The bronchial membrane was thickened, and ulcerated, and bore marks of having been long inflamed. The other viscera were healthy.”

Some additional evidence may be obtained as to the comparative shortness of the grinders' lives, and the prevalence and fatality of their disease, by referring to those cases of it which have been treated at the infirmary. From 1817, to 1830, I have admitted, and discharged 250 grinders. In order to institute a comparison betwixt them, and other artificers, I have taken indiscriminately, and consecutively 250 other patients, excluding from the list grinders, boys under fourteen years of age, and females, in order that the two classes may correspond as nearly as possible with respect to age, sex, and condition in life. This second class consists chiefly of tailors, saw-makers, stove-grate-makers, cutlers, turners, comb-makers,

file-cutters, masons, joiners, chair-makers, edge-tool-makers, scissor-smiths, labourers, hafters, shoemakers, strikers, colliers, stone-getters, warehousemen, moulders, painters, mill-wrights, cotton-weavers, itinerants, stampers, riveters, bricklayers, nailors, watchmen, malsters, forge-men, type-founders, button-makers, platers, white-smiths, corders, spinners, rope-makers, casters, polishers, wheel-wrights, ostlers, saddlers, silver-refiners, chain-makers, bone-cutters, wire-drawers, sail-makers, curriers, barbers, soldiers, &c. Out of 250 grinders, 154 were cases in which the respiratory organs were affected. Out of 250 patients of the second class, only 56 had pulmonary complaints; and the difference in the results of these cases will be found to be as great as the difference in their numbers.

	Cured.	Relieved.	Not relvd.	Non att.	Own desire.	Dead.	Total.
Grinders	33	66	16	21	5	13	154
Second Class	6	88	9	9	3	1	56

The rules of the Infirmary exclude from admission *into* the house all patients who are suspected to be in a consumption, hence grinders in the advanced stages of their disease are made out-patients; when they become too ill to attend in person, they are generally discharged under one of the three following heads, "non-attendance," "not relieved," "own desire;" those so discharged may be regarded, with few exceptions, as having died. Of those who are relieved, the relief is in general only such as has been explained in the preceding pages, whilst perhaps scarcely one can, with strict propriety, be said to have been cured. It is moreover to be considered that during almost the whole of the time referred to, there have been three physicians to the Infirmary, and that consequently these 250 cases constitute only about one third of the grinders, who have been patients there during that period: there are also a great many grinders who never apply to the Infirmary at all for relief. On the other hand, a large proportion of the pulmonary cases met with in the second class consists of habitual asthmas, and chronic coughs; complaints which, though frequently incurable, are seldom fatal.

The following tabular view of the relative ages of these two classes of patients will tend to shew the comparative shortness of the grinder's life.

		Grinders.			Second Class.		
Above	30 years of age	124	.	.	.	140	
.	35	.	.	.	.	83	118
.	40	.	.	.	.	40	92
.	45	.	.	.	.	24	70
.	50	.	.	.	.	10	56
.	55	.	.	.	.	4	34
.	60	.	.	.	.	1	19

If we could deduct from the 250 grinders all those who work at open water-wheels, and those also who have prolonged their lives by serving in the army, there can be no doubt that the above estimate would be still more unfavourable with regard to those grinders, who are constantly employed at wheels worked by steam engines.

In concluding these remarks I may observe that the field, which I have so imperfectly cultivated, is capable, under proper management, of yielding an abundant harvest. Whenever the prejudices of the grinder against post mortem examinations shall have been surmounted, and they are beginning to give way, an unequalled opportunity will be afforded for investigating the pathology of thoracic disease, for illustrating the indications of the Stethoscope, and particularly for determining whether pulmonary tubercles may be produced simply by pulmonary irritation, or whether they always require a constitutional predisposition. If the lungs of grinders should be generally found tubercular, this fact would go far towards establishing the former opinion. Since it would be difficult to select a set of boys, apparently less predisposed to tubercular consumption, than the raw-boned, uncouth, vigorous, hardy, reckless, and lawless grinders' apprentices. Moreover, it is desirable that the public mind should be repeatedly impressed with this important truth, that all the attempts which have hitherto been made, to prevent, or to cure the Grinders' Asthma have utterly failed. So prodigal a waste of human life cannot be undeserving of the attention of our legislators. The grinders themselves, at least the more reflecting part of them, are alive to the dangers of their situation, and would no doubt adopt any plan that could be suggested, with a reasonable prospect of success. Some of them have entered into combinations,* for the purpose of binding themselves to work only a limited number of hours each day; it is obvious however that partial measures of this kind will not be permanent; the restricted party will be unwilling to sacrifice their pecuniary interests by a competition with those, who are at liberty to work as many hours as they please; whilst any attempt to enforce their restrictions would only generate a system of lawless and vindictive oppression. Restrictions of this kind to be useful must be generally observed, and their general observance, I apprehend, can be safely enforced only by legislative interposition; but surely some plan might be devised for obtaining

* I have been informed by a very intelligent gentleman, that these combinations had other objects in view; improvement however of the health would have been one of the results.

this object, without interfering with the freedom of trade; and it could scarcely be regarded as an unjustifiable encroachment on the civil rights of the grinder to compel him, by the strong arm of the law, *not to destroy himself.*

ART. VII.—*An Inquiry respecting the period of Puberty in Women.* By JOHN ROBERTON, Esq. Surgeon to the Lying-in Hospital, Manchester.

(Continued from Page 85.)

THE tribes of Polynesia, or, to employ a more modern appellation, Eastern Oceanica, are of the same race as the brown natives of the Indian Archipelago. Inhabiting islands at once salubrious, fertile and picturesque, of which it may be said without poetic exaggeration that in them “all, but the spirit of man, is divine,” the Polynesians present specimens of graceful and vigorous beauty, unequalled perhaps in any other portion of the human family. Although so much has been written concerning their manners and external physical character, little or nothing has been made known of their physiology.

By the great kindness of Mr. Ellis, the eminent and devoted south sea Missionary, I am enabled in some respects to supply this deficiency. For the sake of brevity, I proceed to give certain of a series of questions which I took the liberty of proposing to Mr. Ellis on this and other subjects of a similar nature, together with the literal answers to them, furnished at his request by Mr. Bourne, likewise a Missionary, who resided nearly eleven years in the islands, and to whom Mr. Ellis had the goodness, of his own accord, to present my queries. In addition to the answers of Mr. Bourne, I am favoured with many valuable remarks by Mr. Ellis himself.*

Query 1.—What is the age of puberty in South Sea females, in general, as evinced by the usual signs and particularly by the eruption of the catamenia? *Ans.*—The age of puberty amongst Tahitians is about ten or eleven. The women have such early connexion with the other sex, that the cata-

* It is to be remembered that the Missionary residing among simple barbarians has to officiate as the Mediciner of the body as well as of the mind. I am assured by Mr. Ellis that, after a knowledge of the Christian faith the most important accomplishment of the Missionary is a practical acquaintance with Medicine and Surgery. Aid, even of an obstetrical kind is occasionally demanded of him, and with too much urgency to be refused. This double capacity which he sustains, of religious teacher and physician, renders the testimony of the enlightened Missionary of incomparable weight on many subjects connected with the natural history of man.

menia never (that I have heard of) appear before such connexion.

2.—Does the age of puberty vary in different islands or groups of islands? *Ans.*—The age of puberty is alike in all the islands.

3.—Does puberty appear earlier in the families of chiefs than in those of common people? *Ans.*—The chiefs and common people are alike in this respect. By Mr. Ellis. “The age of puberty appears to be the same as shewn by the ordinary signs, especially the catamenia, in all the islands of the same latitude or where the climate is equal: excepting that I think in those islands where the productions are more abundant and the mode of living consequently more luxurious, the signs appear earlier than in the same climate where the inhabitants live in a state of greater poverty. I think the Society islanders arrive at puberty rather earlier than the Sandwich islanders and New Zealanders. I am not aware that it does appear earlier in the families of chiefs than in others.

4.—What is the earliest age at which you have known a woman become a mother? *Ans.*—As far as I could form an opinion of the age of females, I should think about sixteen years of age. By Mr. Ellis. “I think I have known mothers who have not been more than fourteen or fifteen years of age.”

5.—What is the average age of marriage for females? *Ans.*—Some marry as young as ten; but the average age is about fourteen or fifteen. By Mr. Ellis. “Marriage takes place from the age of twelve to sixteen years; but formerly sexual intercourse began much earlier, and was often practised when the parties could not be more than six or seven. I am quite confident that I am stating fact on this point. In marriages there is often the greatest disparity in age, the male being thirty or upwards and the female perhaps twelve or thirteen.”

6.—Have you observed that early marriages (giving the ages at which they occur) are generally soon productive? *Ans.*—In very early marriages several years elapse before childbearing. By Mr. Ellis, “Some years usually elapse in early marriages before childbearing.”

7.—To how late a period in life have you known childbearing continue? *Ans.*—To about forty-five years, as near as I could judge.

8.—Have you observed this period to vary, according to such circumstances as climate and degree of civilization? *Ans.*—A hot climate causes women to have children faster than a cold one: but childbearing ceases also earlier than in a cold one. By Mr. Ellis. “I should think childbearing ceased at forty. Although I have seen many young mothers I never

saw any woman have a child who, I should suppose, was above thirty five.”*

These answers and observations require few comments. Taken altogether they certainly corroborate the doctrine of Crawford, already stated, in regard to the tribes of the Indian sea, of which the Polynesians may be considered a mere extension. Although the age of puberty in Polynesian women is said to be about ten or eleven, yet fourteen or fifteen is the earliest age of child-bearing, and forty according to Mr. Ellis, and forty five in the opinion of Mr. Bourne, is the period for the cessation of that function. When, along with these statements, I consider the hesitation which both gentlemen evince in their manner of giving the age, when, as they believe, each of the circumstances takes place—a hesitation arising from the difficulty of becoming acquainted with the ages of individuals in such a condition of society—I confess the impression on my mind is, that although sexual intercourse and marriage are so much earlier in Polynesia than in Europe, it is doubtful whether puberty is really earlier.

We now turn to the African Negress. The Ourang-Outang breeds at three years old, *therefore*, as Long, the Historian of Jamaica would have said, the negress will be mature about the same age, or a little later.† Fortunately we possess extremely valuable information concerning the period of pubescence in the negro—information that rebuts, *this*, one of the countless calumnies which, in the mysterious providence of God, the abettors of slavery have been permitted to heap upon this devoted race; I allude to that which is contained in Dr. Winterbottom’s Natural History of Sierra Leone. It would be well for science and humanity were our intelligent medical practitioners on foreign sta-

* Were it even clearly proved that Tropical women seldom bear children after the age of thirty-five or forty,—such a fact would not prove that their pubescence is earlier than happens in Europeans. It would perfectly coincide with, and tend to illustrate, a physiological principle, the correctness of which is generally admitted, with reference to our own country women, namely, that childbearing commenced at a premature age, for example under sixteen or eighteen, rarely continues throughout the whole of the natural period of female fertility.

† In advocating the cause of the Ourang-Outang against the pretensions of the Negro, this writer proceeds to say “Nor for what hitherto appears do they (the large apes) seem at all inferior in the intellectual faculties to many of the Negro race; with some of whom it is credible that they have the most intimate connexion and consanguinity. The amorous intercourse between them may be frequent,” &c. &c. Vol. 2, 4to. p. 370. Again, “Ludicrous as the opinion may seem, I do not think that an Ourang-Outang husband would be any dishonour to an Hottentot female; for what are these Hottentots? They are ignorant, brutal, &c.” Vol. 2, p. 364. According to this hypothesis, the Mulatto son of a West Indian planter may be the grandson of a monkey.

tions, to make this performance their model for similar works of local history. After commenting on the small number of children generally to be found in the families of the negroes, Dr. Winterbottom proceeds to remark "Although women are betrothed at a very early age, even before they are born, the marriage seldom, if ever takes place before the fourteenth year; and judging from appearances, no women in this part of Africa bear children before this age. There is no doubt that women in hot climates arrive at maturity somewhat sooner than in more temperate and colder ones, and that childbearing sooner terminates. But we may doubt if this be so early, or so generally the case in these countries as authors assert, it being extremely difficult or impossible to ascertain ages, where a few revolutions of the moon comprehend the greatest space of time they retain in their memories."* Again, "The catamenia appear at an early age, but, to judge from appearances, probably not before the twelfth year."† Further, in commenting on what Dr. White has asserted of the Negresses, namely, that they are ripe for marriage at eight years of age, he says "The period of puberty is fixed in both sexes much too early. As far as my experience goes, there is little difference in this respect between the African and the European."‡ Elsewhere he states that the negress bears children to a late period of life, and that negro longevity is no way different to ours. It is pretty clear that Dr. Winterbottom, who wrote in the latter end of the last century, was not free from the influence of the prevailing opinion that heat of climate promotes early puberty. It is therefore much to the credit of his veracity and candour, that he should have yielded himself to the guidance of facts, though militating against his prepossessions.

The Arabian peninsula extends from the Torrid Zone to about the 30th degree north. The legend, that Mahommed took to wife a girl of nine years old, is often repeated, as tending to prove the early maturity of Arab women. Be this story true or false, there cannot be a doubt that the prophet was excellently acquainted both with the physical and mental peculiarities of women. For this reason, the Koran, and perhaps also the writings of its faithful commentators may, as far as they illustrate the present subject, be referred to as veritable authority. The information they furnish is little in amount, but it is perfectly satisfactory. In chapter the fourth "On Woman" there is this command in reference to the duty of a

* Winterbottom, vol. i. p. 150. † Winterbottom, vol. ii. p. 205.

‡ Winterbottom, vol. ii. p. 263.

guardian, "Examine the orphans (in religious matters) until they attain the age of marriage." In a Note by Sale, it is added, that the age of marriage or maturity, is "reckoned to be fifteen; a decision supported by a tradition of the prophet, although Abu Hanifah thinks eighteen the proper age."* In chapter the second, entitled "Cow," which, among other matters treats of divorce, it is said, "A woman, before she is dismissed, must wait to have her courses thrice in order to discover if she be with child." Sale adds, that in the case of those who are too young and those who are too old to have children (which a woman is reckoned to be after her courses cease, and she is fifty-five lunar years or about fifty-three solar years old) they wait only three months.† From this law two facts are elicited, first, that in Arabia women may be married before puberty, and second, that women are not considered to be past childbearing till fully as late an age as is determined for the women of Europe. This latter circumstance is of much weight in deciding the question at issue, for, *if it be true* that Arab women bring forth children as late in life as women with us, it is vain to assert that they are ready for childbearing earlier. The value of the other fact will be afterwards adverted to. In addition to so much presumptive testimony, I am able to add that of the celebrated traveller Madden. In answer to one of a few queries which I took the liberty of addressing to him on some points concerning the Bedouins, he says, "The age of puberty in Arab women is fourteen years. The average age of marriage is from ELEVEN to fifteen."‡ What Dr. Russel reports of the females of Aleppo, may be mentioned here, as the climate of Aleppo differs little from that of Arabia. He has not stated the period of puberty, but his observations are otherwise relevant, as tending to shew that the women are not sufficiently mature for the office of mother, at the preposterously early ages at which they become wives. "The women," he writes, "when married extremely young, that is, about twelve or thirteen, are subject to frequent abortions, in consequence of which, their constitutions are so much impaired, that they either cease breeding altogether about the age of twenty-one, or they remain barren for an interval of several years. Even those who marry at the more usual age, between

* Sale's Koran, vol. i. p. 93.

† Koran, vol. i. p. 41.

‡ Perhaps it becomes me to apologize to the gentleman alluded to (if this should meet his eye) for publishing that which made part of a private and most obliging communication. Had it been an *opinion*, I should have withheld it, but as it is a *fact* of a general, scientific kind, I have been tempted (in the sad dearth of credible facts) to give it.

fourteen and seventeen, though less subject to abortion, are yet, in like manner, when they happen to have brought two or three children before their twenty-third year, liable to cease childbearing for a long succeeding interval.”*

It now remains to exhibit very briefly the various circumstances, which have led travellers to form erroneous conclusions, concerning the period of female puberty in warm climates. They are,—

FIRST.—*Early marriages so general in the east, and in other fertile tropical countries, where the simple means of life are early obtained, and wives, procured by purchase, are viewed as the goods and chattels, rather than as the companions and equals of the men.*† It is strange that a man should marry a child, but it is not less true, and moreover it is not the only strange and unnatural practice to which men have recourse in states of society, where the mind, debased by superstition and tyranny, finds its sole gratification in the indulgence of the grosser passions. No where are there earlier marriages than among the Hindus; of this, we have many curious illustrations in Buchannan’s minute and intelligent account of a “Journey through Mysore, Canara, and Malabar.” Among the Comatigas, a high caste of Hindus, the women are no longer marriageable after the signs of puberty have appeared.‡ Of the Bheri he reports the same custom, and says “Where polygamy prevails love is little known; or if it does possess a man, he is generally captivated by some artful dancing girl, and not by any of his wives, all of whom were married before they could either excite or feel that passion.”§ Among the Waddara the custom is different, they marry as many wives as they can get, for “a man in general is more restricted from taking many wives by the expense of the ceremony, than by any difficulty in supporting a family, as the women are so industrious, that the more wives he can get the more he lives

* Russel’s Natural History of Aleppo, vol. i. p. 196.

† Women among the Hindus are treated “as if they were created for the mere enjoyment of the men, or for their service.” None are taught to read or write except the Temple girls, who are prostitutes. With respect to marriage, “it can only be considered a bargain and sale, by which a father, or any other owner of a girl, disposes of her at a certain price to any person who is willing to buy a wife.” Dubois on the manners, &c. of the people of India. Pages 217, and 257.

‡ Buchannan, vol. i. p. 257.

§ Buchannan. Page 260. For the sake of human nature it ought to be stated that among the Brahmans, when a child is taken to wife she generally returns to her father’s house till the catamenia appear. On this occasion new ceremonies are observed, which they call *marriage complete*. Dubois on the manners, &c. of the people of India. Page 145.

at his ease. A lazy woman is immediately divorced. The girls continue marriageable from seven years of age till their death.”* Again the Pacanat Jogies and some of the other sects “do not marry their girls till after the age of puberty;”† while among the Ladas, a high caste, “a girl after ten years of age is no longer marriageable.”‡ In Sumatra, as well as in the east generally, female children, owing to the custom of purchasing wives, are a valuable part of the property of parents. Hence all marry and very young.§ Speaking of the entire Indian Archipelago, Crawford assures us, that, it is a point of honour with parents to get their daughters married at the age of puberty, and that he never saw a woman of twenty-two who was not, or had not been married.|| It would be easy to multiply illustrations to the same effect.¶

SECONDLY.—*Universal licentiousness, leading to sexual intercourse in childhood, or as soon as desire is felt.* This occasions instances of pregnancy sometimes at a very early age, which, coming under the notice of travellers, are readily and with some shew of reason attributed to general early pubescence. “In Bengal,” says Mr. Dunlop, “I have seen many girls come to the age of puberty at eleven, and sometimes a mother at the age of twelve.”** The former circum-

* Buchannan, vol. i. p. 311.

† Ibid. p. 336.

‡ Ibid. p. 424.

§ Marsden’s Sumatra, p. 218.

|| Crawford’s Indian Archipelago, vol. i. p. 86.

¶ It is not easy to define precisely the circumstances that regulate the age of marriage in different states of society. Even in the east there is considerable diversity in this particular. Among the common people of Cochin-China the age of marriage for the men is twenty or later, and for the women from seventeen to twenty; while the rich marry often as early as fifteen.—Crawford’s Siam, p. 521. In Afghaun it is twenty for the men and fifteen or sixteen for the women. The very poor are later than this, while the rich sometimes marry before the age of puberty. In Eastern Afghaun the age of marriage is still earlier, but in all parts of the country it is regulated by the ability of an individual to purchase a wife and maintain a family.—Elphinstone’s Cabul, p. 179. In Japan, women seldom marry before their fifteenth year.—Golownin’s Recollect. of Japan, p. 100. Of the Syrian Turks, Volney assures us that it is not uncommon to see girls of nine or ten years old, married to boys twelve or thirteen.—Travels, vol. ii. p. 486. To come nearer home—to Greece. The Greek women, according to Wittman, marry about fifteen.—Travels in Turkey, &c., p. 25. And in the Ionian Islands some marry at eleven, many at twelve, and most are married before the age of sixteen.—Goodisson on the Ionian Islands, p. 222. In South America (when it was Spanish) the legal age of puberty for the whites, was twelve for girls and fourteen for boys. According to Depons, nothing was more common than to see a couple whose united ages did not exceed thirty years.—Travels in South America, vol. i. p. 124. In Jamaica, the Creole ladies marry very young, and are sometimes mothers at twelve.—Long’s Jamaica, vol. ii. p. 285. It is irksome to accumulate more examples, I will adduce one other, and then leave the reader to philosophize. The singularly warlike and intrepid Abipones married at, by much, the latest age of all the South American tribes, the men at about thirty and the women at twenty.—Dobrizhoffer, vol. ii. p. 42.

** Dunlop’s edition of Beck’s Jurisprudence, p. 83.

stance is far from being uncommon in our own country; and the latter would doubtless be witnessed, as I before remarked, did the like sexual license prevail, as among the Hindus.* The devoted student of human nature must not have too fastidious a taste. Doubtless his subject is the most delightful and the most profitable in which he can engage, yet, in its pursuit, he must be content with a fate somewhat resembling that of the humbler chemist. As the latter, at one time, has to deal with precious gems and sweet perfumes, and at another with putridity and fetor,—so he who would become acquainted with man as he *is*, must submit to investigate the very lees of his nature (how large a proportion of the whole!) as well as the purer and nobler ingredients. In Asiatic manners, there is to be found much that is odious and feculent, and of this the most pre-eminently disgusting part is, the precocious acquaintance with the sexual passion which almost universally obtains. In allusion to the way in which the Hindus train their children, the Abbè Dubois informs us that, from their earliest age, they are accustomed to scenes of impropriety; that it is not uncommon to see children, of five or six years, become familiar with discourse and action which would make modesty turn aside. The nudity in which they live for the first seven or eight years; the loose conversation, tales and songs to which they have to listen; the stories of the dissolute lives of their gods; the solemn festivals, so often celebrated, where modesty is wholly excluded; the abominable allusions which many of their daily practices always recal; their public and private monuments, on which nothing is ever represented but the most revolting obscenities, and their worship, in which prostitutes act the principal part: these are some, and but some of the polluted sources from which the youthful imagination of the Hindu draws its imagery! A trait of Otaheitean manners, mentioned by

* Since this paper was written, a case illustrative of the above position has come to my knowledge, which occurred in the practice of Mr. R. Thorpe. Having that gentleman's authority for stating the facts, I give them with implicit confidence in their correctness, although, from his notes of the case having been mislaid, he has furnished me with the account of it from memory only. About six or seven years ago, Mr. Thorpe attended a young woman for convulsions occurring during labour of a first child. The foetus was full grown, but still-born. The mother did well. It appeared that the girl worked in a cotton factory, and had become pregnant, as was represented, in her eleventh year. I am assured by Mr. Thorpe, that he and the late Dr. Hardie, were at the trouble of examining the registers of her birth and christening, and fully satisfied themselves that she had really conceived during the eleventh year of her age, and that, at the time of her delivery, she was only a few months advanced in her twelfth year. In regard to her personal figure, he states it to have been in all respects that of a well grown young woman, with the mammæ fully developed. He also ascertained that she had menstruated before she became pregnant.

Forster, is so illustrative of the same peculiarity, that I am induced to insert it. In one of the native dramatic representations "a lady is in labour in the Theatre, and at last a large boy is exhibited, who immediately runs about the stage with the placenta and funis umbilicalis, which is here not considered as indelicate, as every body is acquainted with it, not excepting children of four or five years old: and the oddity that the new-born child runs about, and escapes the midwife, whose business it is to catch him, causes a universal and loud peal of laughter."*

THIRDLY.—*The early decline of beauty and of youthful appearance where the women begin, while very young, to bear and suckle children.* We see this even in our own climate, in almost all cases of early prolific marriage, and still more remarkably when there happens to be superadded, a life of toil, anxiety, and poverty. Frequent as such an adverse condition of the female sex is in Europe, it is, in a far more aggravated degree, their almost invariable lot in Mahomedan and Pagan countries, and, unquestionably contributes greatly to induce premature decay. To these causes, which affect more particularly the symmetry of the figure, are joined certain rites practised with the view of improving the complexion, which however, very soon, produce the contrary effect. The simple manners of savage and semi-barbarous life, have been the theme of much eulogy; but it is nearer the truth to affirm, that the love of personal adornment is greater in proportion as we descend in the scale of civilization. At the bottom are tatooing, the employment of cow-dung and of paint, and an endless variety of modes of disfiguring the features; but in almost every grade of the scale the use of paint is retained, by some to improve or to create beauty, and by others for the purpose of lengthening the period of its duration. With whatever view pigments are applied to the face, their effects, from their being generally composed of metallic oxides, are the loss of the natural hue, and the rapid production of wrinkles; the skin, even in the meridian of youth, soon presenting the dull, roughened appearance, that it assumes in unhealthy old age. Such are some of the circumstances which led the intelligent Marsden to remark of the Sumatra women (and that have led nearly all other writers in similar circumstances to affirm of the women of other tropical races) that "they are like the fruits of the country, soon ripe and soon decayed."†

* J. R. Forster's Observations made in a Voyage round the World, p. 472.

† The strange propensity to paint their faces, is remarked, by travellers, of the women of every race that have skins not absolutely black. Kemper tells us, that

FOURTHLY.—*The difficulty of ascertaining the ages of individuals in countries little advanced in civilization.* We have already heard from Dr. Winterbottom of the impossibility of becoming acquainted with the ages of the negroes from any reckoning of theirs. Marsden affirms the same of the Sumatrans. “Not one in ten” says he, “can pronounce, in what year he was born. A few harvests have elapsed, they are bewildered in regard to the date of an event, and only guess at it from some contemporary circumstance of notoriety.”* The same is reported by Crawford of the natives generally of the Indian Archipelago.† Among the American Indian tribes, the difficulty is still greater. James assures us that “superstitious notions prevent the Indians from taking any note of their ages.”‡

FIFTHLY.—*The influence of Montesquieu.* The celebrity of this writer’s great work, the Spirit of Laws, has now passed away; but no production was more studied, admired, and quoted, during the latter half of the last century. Weighty as the opinions it maintains were esteemed to be, on many topics of high concernment to mankind, none were more unhesitatingly received and adopted, than those contained in the extract already given, relating to the condition of eastern women. The greater proportion of females than males in the east; the infantile pubescence of the former, (for it would seem that he considered sexual prematurity as confined to the women;) polygamy; arbitrary divorce; and the degradation of the sex to a state of seclusion and slavery, were all held, on his authority, to be inseparable from the constitution of eastern society. With such blind ardour were these notions embraced, that we find almost all our travellers, with praise-worthy diffi-

the ladies of Japan paint themselves till they look like so many babies.—History of Japan, vol. ii. p. 455. And the tawny females of the Indian Archipelago file and blacken their teeth, paint their faces, and pluck the hairs from about their eyes, till their natural beauty, in the opinion of an European, entirely vanishes. To confine our observations to Europe and Barbary; the Crim Tartar ladies paint their faces both white and red.—Holderness on the C. Tartars, p. 14. The early decay of the Greek ladies has been often remarked. Clarke says they begin to look old soon after twenty, while the Albanian women long retain their good looks. The Greeks are profuse of paint, while the Albanians trust to the hues of nature.—Travels in Greece &c. part ii. sec. 3, and Wittman’s Travels in Turkey, &c. p. 25-443. The Moorish and Bedouin ladies are still more given to rouge, so much so as almost to mask themselves with it.—Tully’s Tripoli, p. 22, and Lyon’s Africa, p. 40. Of these and of the women of all the races where paint is in general use, the prematurity of their decay has been noted by travellers. On the Continent of Europe, it is well known, that the same practice entails a similar consequence.

* History of Sumatra, p. 248. † Indian Archipelago, vol. i. p. 46.

‡ Expedition to the Rocky Mountains, vol. i. p. 214.

dence, willing to take for granted the bold assertions of the French philosopher, rather than to incur the trouble of observing and investigating for themselves. The consequence has been what was to be anticipated. Their views of the manners and physical character of the races they describe, are often indefinite and incongruous, and their reasonings unsatisfactory. Raffles and Marsden, particularly the latter, are the undisguised disciples of Montesquieu, a circumstance which perhaps, in some small degree, detracts from the value of their otherwise excellent histories.*

SIXTHLY.—*Drawing conclusions from a few data only.* Even in our own country, physiologists have fallen into error concerning female puberty from this very cause. They, as we have seen, have limited the time for the appearing of the catamenia to the thirteenth, fourteenth, or fifteenth year, when, in fact, it has a range of nine or ten years instead of three. It ought not, therefore, to excite surprise when the traveller, or the local historian of a foreign region, reports erroneously, since his opportunity for obtaining accurate information on so delicate a subject, must be very inferior to those of professional inquirers at home. That the inaccuracy of the reports of travellers, however, corresponds with the slender means of information within their reach, is well illustrated by what we learn of the period of puberty among the American Indians. Setting aside the marvellous assertion so long credited, that the Squaws have no catamenia, Dr. Rush says, they do not begin to menstruate “till they are about eighteen or twenty years of age.”† James, in the account of the Expedition to the Rocky Mountains, writes thus of the same race: “We were informed that the catamenia and consequent capability of child-bearing, take place about the twelfth or thirteenth year.”‡ Among the Potowatomis, a tribe on the southern margin of Lake Michigan, Keating reports, that the catamenia appear

* It is surprising how uniformly, unhesitatingly, and yet how vaguely, under the influence of a preconceived and popular theory, early pubescence is ascribed, by our voyagers and travellers, to the women of almost every country out of the bounds of Europe. Of the Otaheitians, Forster observes, “The call of nature is heard at an early age in this happy clime.”—*Voyage Round the World*, p. 216. Of the Aborigines of New Holland, Collins says, “The union of the sexes takes place at an earlier period than is usual in colder climates.”—*New South Wales*, vol. i. p. 563. And the New Zealand women, Capt. Cook tells us, “are marriageable at a very early age.”—*2nd Voyage*, vol. i. p. 140. What are we to understand by such indefinite phrases as “early age,” “earlier than in cold climates,” and “very early age”? Yet in perhaps a hundred massive volumes of *Voyages and Travels*, we shall search in vain for as much information on the period of puberty as these extracts contain!

† Pritchard on Man, vol. i. p. 112.

‡ James, vol. i. p. 214.

about fourteen; and among the Dacotas, another people north of the former, at fifteen or sixteen.* The women of California and Chili, according to M. Rollin, surgeon in the expedition of La Pérouse, menstruate about the age of eleven or twelve.† While, to add the climax to this tissue of contradictory statements, Humboldt assures us, when treating of the Chaymans of New Andalusia, who are often married at the age of twelve, that early puberty is common to all the copper-coloured tribes, and is a peculiarity of the race, irrespective of climate!‡ Perhaps a reference to the table, illustrating the period of puberty in our own country women, in a former page, may enable the reader easily to reconcile these discrepant accounts, by shewing that each of these writers was, in all probability, correct, as far as the observation of a few facts went, and only wrong in venturing to generalize from too limited premises.

In conclusion, it is perhaps scarcely necessary for me to observe that we are still in a great measure ignorant of the causes which diversify the period of puberty in different women. I do not absolutely affirm that climate is not one of the causes. I only assert that if it be a cause, of which, in my judgment, we have no satisfactory proofs, it has not the great and uniform influence that has been ascribed to it by authors. A very moderate degree of zeal and industry in any of our Indian medical practitioners directed to the inquiry, would suffice to settle this point. I shall be happy should this trifling effort of mine have the good fortune to stimulate to such an investigation. To me, the determination of the question (if this Essay have not determined it) appears of much interest, as involving another, namely, whether there be an equal susceptibility of moral improvement in the different races of mankind. If it be generally true that fervour of climate develops the sexual passions long before the expiration of childhood, such a fact must in some degree militate against the high hopes entertained by so many, that a brighter day of moral and political renovation is, at no distant period, to dawn on the degraded myriads of the equinoctial world.

Various points remain for the investigation of future inquirers; such as whether lewd practices, lewd scenes and conversation hasten, as is alleged, the appearance of the catamenia. Whether a soft and delicate manner of living has a similar effect. Whether various kinds of diet have their specific in-

* Keating's Expedition to the Source of St. Peter's River, vol. i. p. 131 and 232.

† The Voyage of La Pérouse, vol. iii. p. 206.

‡ Personal Narrative, vol. iii. p. 235.

fluences. How far a particular period of puberty is hereditary, or a family peculiarity, &c. These and other points that might be mentioned, none of which is unworthy of consideration, I gladly bequeath to the industry of others.

ART. VIII.—*Observations on the Treatment of Croup*. By
W. GOODLAD, Esq., Surgeon, Bury.

I VENTURE to direct the attention of the readers of your Journal to the treatment of a disease, frequently observed in this district, and alike interesting from its rapid progress, and fatal termination. The disease to which I allude is best known by the name of Croup, for which reason, though only expressing one of its characters, I venture on the present occasion to retain it.

It does not seem necessary to dwell on the symptoms by which this disease is characterised, because they are well described in Mr. Porter's valuable "*Observations on the Surgical Pathology of the Larynx, &c.*" I shall confine myself therefore to a brief outline of that treatment, which has almost invariably been followed by the recovery of the patient, and will, I doubt not, be equally successful in other hands.

But, though I never despair of curing Croup, if consulted before there is effusion, I do not wish to under-rate its danger, nor the necessity, of an active and constant superintendence. On the contrary, I think the practitioner who visits, and prescribes, and leaves the patient to the charge of others, is highly reprehensible. The patient ought not to be left until every alarming symptom is removed, and this observation cannot, I think, be ill timed or unnecessary, whilst we see cases of Croup recorded, as examples for treatment, where the patient has been unseen for twelve or twenty hours, though half that time is sufficient to produce irremediable mischief.

In this complaint, every gradation may be traced (by placing the ear within a short distance of the patient's chest) from the brazen-like sonorous cough, to the gentle stridule heard more faintly as the patient approaches to convalescence, *and is able to draw a full and a slow inspiration*. On the other hand, if there be rattling conjoined with a disposition to sleep, pale or livid lips, and cold extremities, effusion has taken place—death must follow, and will be accelerated by the remedial means we should otherwise employ. But so long as the attack is accompanied with a high sounding cough, without rattling, the mischief whatever it may be, is not irremediable; I would go

much further, and declare it ought to be arrested, and feel a perfect conviction, in the majority of cases, that it may.

I am aware that there are instances on record, where death has taken place, though no effusion could be discovered afterwards. These cases probably gave rise to the doctrine of spasm, regulated the treatment in many cases, and still are quoted with more observance than they appear to me to deserve. But granting their validity, it has not yet been proved that a more active treatment would not have saved life; nor is death, under such circumstances, a common occurrence, where no remedies have been used. Amongst the poorer classes in Lancashire, who seldom call in assistance for Croup, until all chance of recovery is destroyed, I have never yet seen a case terminate fatally, without an effusion in the bronchia being conspicuous several hours before death; and I am much disposed to attribute such an event where it has happened, to the remedies made use of, rather than consider it a natural termination of the disease; particularly as some of those commonly in use are well calculated to produce it.

Amongst these the warm-bath is one of the most active, and, at the same time, most injurious; and I cannot imagine how any one, who has once witnessed its effects, can again recommend it in Croup. It is, in my opinion, so decidedly hurtful, by quickening the circulation, that I should interdict its use in almost all inflammatory cases. The warm-bath, I think, is never useful unless prolonged until faintness is produced; and in the early stages of inflammatory complaints, it is often impossible to produce this effect, until the heart beats more than 130 times in a minute, which is a degree of excitement I think unwarrantable. If resorted to later, effusion is brought on sooner than it would otherwise supervene; and many practitioners could, I think, call to mind cases, where its use has been followed by unexpected death: the vessels previously emptied perhaps by bleeding, having given way, and apoplexy supervened.

These opinions respecting the hot bath, might arise from prejudices, but others have been convinced of its pernicious effects, by treating the same disease with, and without, this remedy. In one instance where puerperal peritonitis was prevalent and fatal, a practitioner, who at my suggestion, desisted from using this remedy, never lost a patient afterwards, though several cases of death had immediately before occurred in his own practice.

But if this state of the circulation be, in common cases, attended with risk of effusion, how much more is it to be dreaded in Croup, where the life of the patient is destroyed,

unless the venous blood already sent to the lungs, can be so changed by the quantity of air admitted, as to be rendered fit for arterial circulation. And who that considered it, would, whilst the air received into the lungs is so limited, send an additional quantity of blood to be thus acted upon, and with additional impetus.

The lungs already overloaded, are still further surcharged, the struggles for breath more intense, every muscle is brought into action, and either death immediately supervenes, or the ill-changed blood is pumped by the heart, to the brain, and to the nervous system at large, and brings on the stupor which is the forerunner of death.

Emetics I consider in the same light in Croup, if given in doses which produce vomiting. This action consists, not merely in ejecting the contents of the stomach, for respiration is suspended by it, whilst the heart continues to act, and by propelling blood to the lungs, the balance between these functions is so far destroyed, that the greatest muscular exertions become necessary to restore it. These struggles are more violent and injurious in proportion to the progress of the disease, so that when fully formed, emetics, I think, ought never to be exhibited.

Nauseating doses of emetic medicines are often given, and some authors trust to their influence in relaxing the extreme vessels, and to the power they possess over the action of the heart. It is an important, though melancholy fact, that almost the only case of recovery from Croup, in Mr. Porter's work already alluded to, is one where this state of the circulation was kept up by nauseating doses of emetic tartar for many hours. But there is great reason to dread the action of this medicine, which too often acts as a poison on children when in small doses, and it appears to me that the means of relief are very disproportioned to the violence of the disease; and, in the majority of cases, very inadequate to remove it.

A further, and if possible, more formidable objection, is the length of time occupied in giving this treatment a due trial; and, where three or four hours are allowed to pass away, exhibiting only small doses of nauseating medicines to cure croup, the practitioner becomes responsible to a degree which can only be estimated by the effects resulting from such a treatment.

Blisters, applied upon, or in the neighbourhood of the wind-pipe, in the early and active stages of Croup, have always appeared to me decidedly injurious. Here, also, several hours must elapse before the operation of the blister commences, much time is therefore lost which can never be redeemed; and when the blister does rise, the sense of stricture about the

larynx is increased by it, the constitutional disturbance heightened, the pulse quickened, and the inflammation rendered more violent.

It would be easy to enumerate instances in all acute diseases in the neighbourhood of the larynx, where this remedy has done harm; in quinsey, and in ulcerated sore throat, with or without eruption, if the disease be at all active, the pulse materially quickened, and the tongue coated, the inflammation is increased, and the edges of the ulcer become irritable and slough, and the disease extends. It is a momentous subject of inquiry, in how many of those cases, where Croup has supervened on ulcerated sore throat, this application has been used.

Another, and perhaps one of the most important considerations is, the state of the atmosphere in the patient's room. In almost every case where I have been consulted for the first time in Croup, I have found the patient respiring an atmosphere heated to 80 or 90 degrees of Fahrenheit; and even more, with every crevice stopped, by which cold air could be admitted; with a large fire and a hot bath.

It scarcely seems necessary to remark that, an atmosphere thus rarified, contains, in a given space, less oxygen than a cooler one, and is less capable therefore of producing that change on venous blood, which prepares it for arterial circulation; nor that this high temperature quickens the circulation, and is thus also injurious. These bad effects are best illustrated by the immediate relief afforded by the admission of fresh and even cold air; which alleviates the symptoms, by passing over the inflamed surface, and stimulates the muscles of respiration, by its action on the skin: and it is most certain that the free admission of cool air may, in Croup, be classed amongst those auxiliaries, without which, few cases can be brought to a successful termination.

From what has already been said, it is evident that two indications are necessary to be attended to, in the cure of Croup; the first is to subdue the inflammation of the wind-pipe, the other to relieve the oppressed circulation. Without the first object be attained no means will avail; nor will it in every case be safe to wait until that can be accomplished, before we relieve the system at large. Danger may be imminent from either of these causes, and we have often to determine whence it is most so, and to regulate our practice accordingly.

The causes which produce Croup, its symptoms and progress, alike indicate the necessity of blood letting, and this remedy, in comparison with which all others sink into insignificance, should be immediately resorted to. Any quantity

of blood may be drawn by leeches, and the local complaint, in almost all cases, be subdued by them; for if one crop of leeches do not remove it others must follow, until the breathing becomes free, or the child so faint, that further depletion would be unsafe. This mode of taking blood, by emptying the vessels which are inflamed will, it is evident, afford relief, with least expence to the constitution: but when the complaint has existed many hours, and the jugular vein becomes alternately distended and collapsed, during each inspiration; when the angles of the mouth are drawn downwards, every muscle of the neck brought into action, and the breathing consists of a series of gaspings, there will not be time afforded for leeches, and not a moment must be lost. The external jugular vein should be immediately opened with the lancet, though this operation is sometimes exceedingly difficult requiring a quick eye and a prompt hand to catch it between each inspiration. The struggles of the patient, and the great contraction of the muscles, add to this difficulty; but no consideration should deter us from giving instant relief, and no other method of taking blood seems to afford the same immediate benefit both to the head and breathing. The child may be on the brink of effusion, and every minute lost, is matter of serious reproach; but this urgency of the case, which if not attended to, will speedily be followed by stupor, and that loss of sensibility over the whole frame, so favourable to effusion, renders additional precaution necessary; for if the depletion be carried too far, or the vessels emptied very suddenly, that event so much to be dreaded will be accelerated.

The finger should therefore be kept upon the pulse whilst the blood is flowing, and the further flow of blood prevented, if the breathing be properly relieved, before faintness is induced. It is safer to trust the further treatment of the case to leeches, which are indeed often necessary even when the jugular vein has been opened, and the loss of blood carried for the time to the greatest extent. This will not be matter of surprise, when we consider how little connection there is between the arteries ramified upon the inner surface of the wind pipe, and the external jugular vein. It is safest, therefore, to unload the general circulation, where that is requisite, from the system at large; and treat the local complaints with leeches where they can be easily obtained; but if not, the finger may be placed upon the orifice for a short time, when the breathing is relieved; and another and a smaller quantity of blood be taken from the same orifice, until faintness deter us from proceeding further.

I have generally directed leeches to be put on the lower part of the windpipe, below the *pomum adami*, because they

bleed quite as well as on the upper part of the tube. The blood is drawn from those vessels, which have most recently taken on the diseased action; the inflammation is thereby prevented from extending, and the vessels already weakened by disease, are emptied more gradually and with less danger of their giving way.

In whatever manner the blood be taken, a degree of faintness must be produced, *and kept up for some time*, which renders the continuance of inflammation impossible, and the patient watched most narrowly, lest re-action come on, and more leeches be necessary. It is now that the ear of the practitioner will be most useful to him, and the sound of the cough, the noise which is made by the air passing through the inflamed part, and the frequency and freedom of the inspirations must be closely attended to. He should never leave the bedside of the patient until he is satisfied on every one of these points, since he cannot do so with safety, or consistently with that duty we all owe, where the life of a fellow creature is at issue. By and bye, he will be rewarded by hearing the cough alter its tone, it becomes loosened, there is a little expectoration, and the child is safe.

It is difficult to convey to the mind of the reader, those shades of difference, which minute attention, will soon teach him, and it is better perhaps to rest satisfied with directing his observation, to those points in practice which are really important. But I wish to repeat, that a stridule will remain after the respiration has become free, and though neither this symptom, nor the high sounding cough, afford sufficient reason to apply more leeches, yet, the long continuance of either of them, is always an object of suspicion, and *unless the inspirations be free, full, and slow*, he may rest assured that the inflammatory action is not entirely removed.

I have hitherto considered Croup a primary disease, but the majority, and the most severe cases are accompanied with, if not produced by, teething, which keeps up the irritation, produces relapse whenever reaction takes place, and is accompanied with determination to the head, and a disposition to inflammation and effusion there. The state of the gums ought always to be attended to, and they should be freely lanced, if there be heat or thickening over them in any part: and this precaution is often necessary, until the child has cut the first of its permanent teeth.

During this time the bowels will have been opened by a dose of calomel and jalap, or of castor oil; and the only other medicine I am in the habit of giving, is calomel with opium in large and frequent doses. This combination which, before

the loss of blood, would be highly pernicious, if given only when the head is freed from oppression, and the breathing is quieted, has always appeared productive of the best effects. It produces sleep, appeases the cough, creates determination to the skin, and prevents reaction; whilst the calomel acts here as in iritis, by preventing effusion and producing absorption.

Another advantage arising from the combination of opium is, that it enables us to give a larger quantity of calomel, than would be otherwise practicable without its passing off by the bowels; and as the glandular system in children is seldom affected by it, and ptyalism therefore rarely induced, we need not be deterred from giving it largely, and have occasion only to watch its operation on the bowels.

I subjoin a few cases, which could easily be extended, since it gives me an opportunity of acknowledging, how often I have had the benefit of my brother Mr. Joseph Goodlad's advice and assistance, to which much of the success, in some of these cases is owing.

Dec. 31st, 1825.—I visited Miss E. A., aged six years, and found her with a quick pulse, countenance florid, skin moist, and labouring under most difficult breathing, each expiration being accompanied with a high sounding sonorous cough, every muscle of the neck in action to assist in this operation, the angles of the mouth drawn down, and gasping at each inspiration. She was being held by force in a tub of hot water, struggling hard, and the external jugular veins swelled out to an enormous size, or collapsed alternately so as to be scarcely visible.

I immediately opened one of these vessels, and allowed the blood to flow down the neck and chest, for she could not have borne the least pressure from any vessel to catch it, the quantity taken away was therefore uncertain; but there had been a cough since the 27th, and the difficulty of breathing had existed twelve hours. She was bled until faintness was produced, from a large orifice, removed into a cooler room, placed in bed, with the head and shoulders raised, and the feet wrapped in flannel. Her breathing was much relieved, but the cough continued high sounding and frequent, and seldom consisted of more than one effort. A dose of calomel and jalap was given shortly afterwards, and after the bowels were opened, two grains of calomel and one-eighth of a grain of opium every two hours.

Jan. 1st, 1826.—My brother remained with her after midnight, and early in the morning directed four leeches to the lower part of the trachea. She had continued the calomel and opium, and about 4 a. m. the cough first became loose and there was some expectoration. She is now (8 a. m.) free from pain, with a moist tongue, and pulse calm, but very faint if the head be raised from the pillow. The leeches bled very copiously.

Jan. 2.—The bowels have been again opened by senna tea, and a blister was applied for four hours on the upper part of the chest, which is now rising—patient convalescent.

I visited the son of Mr. ———, of Chester, at Radcliffe, aged six years, of slender frame and delicate health. He had been seized about 10 p. m. the preceding evening with cough and difficulty of breathing, which had gradually increased until I saw him about four hours afterwards. He had been in a hot bath, and was placed near a large fire, where the atmosphere was much heated, the door closed, and the curtains drawn around the windows.

I immediately opened the window, reduced the temperature of the room, and directed leeches which had been already sent for, and were in the house, to be applied on the lower part of the throat, and ordered a dose of calomel and jalap.

Eight leeches were placed over the lower part of the trachea, in a cluster, and before they were filled, this very intelligent little boy expressed himself easier. His cough was incessant, high sounding, consisted of one expiration merely, but the disease was well known here, many instances of it having occurred in the same house, and some of them fatal ones. The disease was therefore attacked early and soon yielded; before morning the stridule was nearly gone, the cough greatly quieted, and the breathing free—and he soon became convalescent.

Feb. 18th, 1829.—Miss J. H., was visited at 2 a. m., her breathing and restlessness having awoken her nurse soon after midnight, it was discovered that she had been sleeping in a room, the windows of which were left open, on this very cold night, which was also excessively foggy. She had the usual symptoms of Croup to a very aggravated extent, she was besides exceedingly delicate, had suffered much from teething and the fever attendant on it. This young lady was cousin to the little girl whose case is first related, her parents were therefore aware of her dangerous situation, and had sent for leeches, at the same time that they sent for my brother. No time was therefore lost, which was fortunate, since the house is a lonely one, and they could not be obtained in less than an hour. Four leeches were applied directly, but as the breathing continued very difficult and the cough incessant, two others were applied before they came off. They bled profusely, and so much faintness ensued that the bleeding was stopped. Some domestic purging medicine was given, and the bowels opened, after which twelve grains of calomel and one of opium were divided into six doses, and one given every three hours.

My brother remained with her till six, a. m., at which time I visited her, and found her breathing tranquil, full and low, her pulse quiet, she had been asleep half an hour, but there was slight whistling.

On the following day a small blister was applied, since some cough remained—but the patient soon became convalescent.

This young lady has had two other attacks of Croup, of a less serious nature since the one now recorded, and a younger sister has also laboured under the same formidable complaint, owing probably to the house being situated in a narrow valley, through which the south-west winds always loaded with wet, and which in winter are very cold, sweep, and the fogs are excessively dense and frequent.

In one of the houses in this neighbourhood, the walls of which form the boundary to a stream of water, and from being cellared very imperfectly has the soil beneath it constantly saturated, not only every child belonging to the family which occupies it has been seized with the Croup, but some of them repeatedly, and almost every stranger under eight years of age, if resident there in the winter or spring has, in like manner, suffered from this serious malady.

The following case is worthy of being recorded, from the narrow escape the patient had of being suffocated, and the resemblance of the symptoms to Croup, for which indeed it was treated.—

Dec. 4th, 1812.—I was called in great haste to visit the son of Mr. F. W., residing about two miles from Bury, who had been seized very suddenly with a high sounding cough, great difficulty of breathing, and a sense of suffocation. He fell to the ground, his face became livid, and it was thought the boy was dying. Before I reached him, he was much better, but his breathing was very difficult, his face high coloured, and his cough incessant. The pulse was small and wiry, and he was unable to lie. His symptoms resembled Croup, in every thing but the suddenness and the violence of the attack, for he was playing at the very moment of his seizure. He had been placed in a warm bath before I saw him, and I immediately took about six ounces of blood from his neck; but his cough was incessant, every second or third expiration being accompanied with the usual effort, as if to relieve the wind pipe from something within it; leeches were then applied, the bowels opened by an injection, and some saline purgatives exhibited.

Notwithstanding these means, the cough continued, but the breathing became tranquil, and the patient complained only of a sense of weight below the clavicular

end of the sternum. He resumed his play, but was kept from school, and confined to low diet; till one day about three weeks after his attack, he was again seized with a most violent fit of coughing, followed immediately by sickness, and suddenly there was ejected the iron pike of a common spinning top, with which it now appeared he was playing on his first seizure, and which slipping through the glottis produced the symptoms I have already enumerated, so closely resembling Croup that it was difficult to distinguish them. The extraneous substance had, however, got past the irritable portion of the tube, and excited for some time comparatively little disturbance.

ART. IX.—*On Idiopathic Phlebitis, with notice of a case of Puerperal Phlebitis.* By PAUL SLADE KNIGHT, M.D., Glossop.

TO THE EDITORS OF THE NORTH OF ENGLAND MEDICAL AND SURGICAL JOURNAL.

Gentlemen,

THAT periodical medical literature diffuses and keeps active a spirit of inquiry and observation amongst the members of our profession is an indisputable fact; that the science of medicine has acquired and is acquiring a gradual approximation to a greater harmony of parts, and fixity of principles is equally certain; but that much, very much yet remains to be done, I believe every experienced and reflecting man in the profession will readily acknowledge: it behooves us therefore, one and all, as members of a liberal, learned, and deeply interesting profession, to throw each his stock of information into the general fund for the benefit, not only of the respected members of our community, but of society at large; for it is undeniable that our labours have greatly promoted, and have a direct tendency to augment, the happiness of the whole race of man. To you gentlemen devolves the honourable duty of selecting what is required, or desirable, to add to this fund of human knowledge. In this spirit I submit for your information a concise account of what I shall term *Idiopathic Phlebitis*.

Joseph Harrop, aged forty-eight, is a strong muscular man, but considerably the worse from wear and tear. He served in the Peninsular wars in the Horse Artillery, and was there wounded by musket shot, once on the lower part of the right tibia, and another time the ball penetrated through the inner part of the thigh, passing pretty near the trochanter minor, also on the right side; he also suffered much from exposure at nights, and excessive fatigue, and he supposes that, in consequence, the veins of both legs have become varicose. In November last he was employed as a watchman, and during one very cold night he suffered much, and shortly after pain and erysipelatous inflammation made its appearance on the inner side of the left leg up the course of the absorbents; and for which he took mercurial purgatives, and the carbon. sodæ, and applied to the part leeches and a sedative lotion. On the 2nd December, about a fortnight after the first application for relief, the man complained of

headach, with a pulse about 90 and sharp, and a countenance expressive of great anxiety; I found the vena saphena inflamed, and to the touch it conveyed the sensation of a cord under the integuments, extending from a little above the inner condyle of the knee, up to the abdominal ring, the integuments of the knee immediately above the vena saphena in a state of very active inflammation, and the vein itself, at that part, perceptible to the eye, bulging and large, and somewhat elastic on pressure. As this tumour produced extreme pain, *and as it was quite clear that all circulating communication was cut off*, I resolved to open it freely, a large clot of coagulated blood instantly plugged up the orifice but was gradually protruded out, and clot after clot succeeded, great ease being the speedy result. Below this spot I was subsequently obliged to open two abscesses that had formed in the vein, and from which healthy pus mixed with coagulated venous blood was discharged; these abscesses healed readily, but repeated local and general bleeding, the latter performed in the erect posture, and continued till fainting was produced, was necessary to subdue the soreness of the part. This had scarcely been accomplished on the 19th Dec. 1829, when the poor fellow directed my attention to the vena saphena of the right thigh, it was inflamed from below the knee up to the abdominal ring, that is, it felt extremely sore, and produced to the touch the same impression that a cord would, a slight blush was visible immediately over the vein—thirty-six ounces of blood were taken from the arm, and two dozen leeches applied along the course of the inflamed vein.—℞ Pil. Hydrarg. ʒi. in bol. ii. divide capiat i. nocte maneque

20th Dec.—Much pain on pressure—pulse hard and full, countenance very anxious, complains of headach, bowels open.

V. S. ad. 1b ii. and apply twenty-four more leeches.—℞ Subm. Hydrarg. ʒi. Opii. purif. gr. iv. Cons. Ros. q. s. ut. ft. massa in pilulas xxiv. dividend. quarum capiat unam quarta quaque hora.

21st.—Blood taken yesterday much cupped and buff colored. Pulse 80, and sharp—continue the pills. Pulse softer.

22nd.—Mouth affected, pulse soft and free, a hard tumour in the groin, as felt yesterday, is separated into detached and small hard masses; the ptyalism was continued about a fortnight, when all inflammatory action had subsided.

OBSERVATIONS AND REFLECTIONS.

During the whole progress of this case there was always an increase of febrile symptoms in the evenings, the skin was hot, face flushed, head ached, with anxiety and restlessness. During the progress of the cure of the left vena saphena, which was remarkably tardy as compared with the right, the submurias hydrargyri, or pilula hydrargyri had been given in morning and evening doses, at intervals of one or more days, sufficient to keep the bowels open; the attack of inflammation on the right side must have been exceedingly subtle or very sudden, for my patient, who is an intelligent man, called my attention to it at my morning visit, having only felt a soreness in the vein some time the preceding night, and yet

the whole course of the vein, from the knee upwards, was inflamed and indurated; and this is the more extraordinary as the patient had been subjected for five weeks to active antiphlogistic treatment, was confined to bed, and had the abscesses open below the knee on the left leg: is it possible that the inflammation in the left vena saphena had extended up the iliacs to the vena cava, and so returned down the right iliac, and yet the man live? Not long since I opened the body of a woman who had suffered much after child birth, from pain in the back and lower extremities, which was said, by the irregular medical attendant whom she employed, to be rheumatism; and this, after a severe jolting in a cart, for change of air, was succeeded by paraplegia. At this time, about six weeks after delivery, I was called in, the lower extremities were warm and were very sensible to the touch; but not only were they perfectly motionless, but the bladder was partially paralyzed also, so that sometimes the catheter was called for:—general and local bleeding were my chief remedies, and always procured alleviation of her sufferings. She lingered nearly three months, and the examination took place twenty-four hours after death, and I found that inflammation of the veins had extended from the leg on each side to about an inch up the common iliacs; the external iliac on the right side, which was the only part I had time to dissect, had pus in its cavity, and was sphacelated a little before it dips under the abdominal ring, and on this part being exposed I received a message to say that the operation was become offensive in the house, and desiring me to desist. The viscera of the abdomen appeared perfectly healthy; the blood from the leg up to its termination in the common iliac, was not only coagulated, but so firm as to be friable: it suddenly terminated in both the common iliacs in an obtuse conical form, and the friability of the mass, and this peculiar form, strike me to be worthy of especial notice. Does not the friability, and indeed exsiccated state of the blood shew that the circulation in those parts had ceased very long before death had ensued? The *immediate* cause of death, I doubt not, might have been found in the spinal column; as the paralysis gradually advanced upwards, till the muscles of respiration lost their power, and then she died; from these facts it appears, that very extensive destruction of venous circulation would not of itself destroy life.

I may be permitted to infer that some inflammation at least, and I should conclude a great deal, had existed, not only in the small portion of common iliac unoccupied by coagulated blood, but along the course of the vena cava also, although not the slightest trace remained after death; in Harrop's case, then, I think it possible, though I will hardly go so far as to say I think it probable, that the inflammation did pass up as high as the vena cava, and then down the veins in the opposite limb. Now, gentlemen, permit me to revert to the consideration of the obtuse conical form of these masses in both the common iliacs, the exhausted and clean state of these veins and the inferior cava, and also to notice the temperature of the system generally.

I assume that the blood in this case would gradually become more and more concrete; it would not at once and suddenly become compact and friable; and that during this operation the more fluid and healthy blood would simply be inert on the impacted mass, unless it were impelled from it by some power. That the fluid blood did not remain in an inert state is proved by the fact that *immediately* above this conical formed exsiccated mass of blood, the remaining portion of the common iliacs of the inferior vena cava were as free, even from any stain of blood, as though they had been washed clean with water—what power then had so completely removed the fluid blood? Not any residing in the coats of the veins, nor any by the impulse of the circulation, for this power was effectually barred by the concrete masses; where then is the power to be found except in the heart? I believe no where, but in the heart a very ample power exists; this beautiful machine, being a double forcing pump, making itself the centre of its own action, is alternately exhausting and filling the same series of tubes; the valves in the veins, and any propulsive power the arteries may be supposed to possess, although they may assist, are perfectly inadequate to these powers; they could have had no effect in removing the blood out of the diseased veins I have instanced. The conical form too of the concrete mass of blood where it terminated in the common iliacs is precisely that which a semifluid mass, becoming more and more compact, would assume if acted on by a forcing pump in tubes placed under similar circumstances. The temperature of the lower extremities, when the patient was in bed, and I did not ascertain the temperature when she was in a vertical position, was, to the hand, fully equal to any other part of the body; and since the volume of blood circulating in the lower extremities must have been reduced to the smallest possible quantity, the external and internal iliacs being impervious, it is proved that heat does not depend on the volume of blood circulating in a part, nor on the nerves of motion, as she laboured under complete paraplegia. I have a preparation of these parts in spirits, and shall have much pleasure in shewing them to any of my professional brethren.

In concluding, perhaps I ought to apologize for touching so imperfectly on subjects of so much importance as the circulation of the blood, and the generation of heat in the animal system, but I must observe my object is simply to record facts, and not to form theories.

ART. X.—*Remarkable Case of Dropsy.* By JOHN FOTHERGILL Esq., Surgeon, Selby.

MRS. H....., late of Selby, aged 22 years, was attacked with a disease in the year 1813, commencing with pain in the abdomen and in the region of the kidneys, accompanied with that kind of constitutional irritation which usually attends diseases or affections of the uterus. The general health suffered in some degree at the time, and the digestive organs were considerably disordered. At first, a small

tumour made its appearance above poupart's ligament, lying upon the brim of the pelvis, in the hollow formed by the iliacus internus muscle, and extending upwards into the left iliac region, and not seeming to be of the encysted class, as no distinct fluctuation could be perceived, but as I did not attend her at that period and for some time after, I am not able to give so particular a detail of the concomitant symptoms then existing as I could wish.

In the year 1815, October 11th, the operation of paracentesis was had recourse to for the first time, and the fluid discharged amounted to nine quarts. She continued to undergo the same operation at various indefinite periods to December 5th, 1828, but as she had left this part of the country to reside in the neighbourhood of York in *September*, 1827, I cannot correctly state how frequently she underwent the operation betwixt that time and her dissolution, which took place December 11th, 1828, though I am informed that the operation was had recourse to as frequently as usual, viz., once in three or four weeks, and that the fluid amounted in quantity each time to eight or nine gallons.

The general health (notwithstanding the immense evacuation of fluid) did not suffer much until the last year of her life, when she became gradually and greatly emaciated; diuretic medicines scarcely ever appeared to be advantageous, neither were a variety of other medicines administered at various periods of any use in carrying away the fluid, except in one or two instances in the year 1819, when very powerful doses of elaterium, with calomel, and opium, &c., appeared to lessen the size of the abdomen, but when administered at future periods were not of any service, and excited great constitutional disturbance.

The pulse was in general quick, seldom less than from 120 to 130; not more than a pint or a pint and a half of urine was discharged in the twenty-four hours, and the bowels were always in a very torpid state, requiring the regular use of mild aperients. The appetite was in general good. The legs did not swell except a little each time before the operation was performed, and which was principally occasioned by the accumulation of fluid in the cyst producing pressure on the absorbent vessels. She slept in general very badly, notwithstanding she was in the daily habit of taking frequent and large doses of opium. The skin was universally rough and dry. The catamenia had entirely ceased since 1824. Each time when the fluid had accumulated to a certain extent, requiring the operation, she suffered extreme pain until the distention was removed, and after the fluid was discharged and during the time, syncope, difficulty of breathing, and a spasmodic action of the diaphragm occasioned very great distress and inconvenience, but in the course of a few hours she was again enabled to resume her domestic avocations or walk about. The circumference of the body when distended, measured one yard and three quarters, and when the fluid was removed a very peculiar hard irregular tumour appeared within the abdomen.

Mrs. H., was married in 1811, and had one child in 1812,

STATEMENT of the different periods of Time when the Operations were performed and the quantities of Fluid discharged.

NO.	MONTH.	YEAR.	QUANTITY.			NO.	MONTH.	YEAR.	QUANTITY.		
			Gals.	Qts.	Pnts.				Gals.	Qts.	Pnts.
1	Octob. 11,	1815	2	1	0	59	August 3,	1824	8	0	0
2	Decem. 5,	—	0	2	1	60	August 31,	—	8	1	0
3	March 16,	1816	2	2	0	61	October 3,	—	8	3	0
4	June 7,	—	3	1	0	62	Nov. 6,	—	8	3	0
5	August 13,	—	3	2	0	63	Dec. 9,	—	8	3	0
6	Octob. 13,	—	3	2	0	64	Jan. 10,	1825	8	2	0
7	Dec. 18,	—	3	3	0	65	February 8,	—	8	3	0
8	Febr. 21,	1817	4	0	0	66	March 8,	—	8	2	0
9	April 5,	—	4	1	0	67	April 3,	—	7	2	1
10	March 9,	1820	3	1	0	68	May 3,	—	8	2	0
11	May 1,	—	3	1	0	69	May 31,	—	8	3	0
12	June 21,	—	3	0	0	70	June 27,	—	7	2	1
13	August 14,	—	4	2	0	71	July 26,	—	8	1	0
14	Octob. 27,	—	4	1	0	72	August 22,	—	8	0	0
15	Decem. 14,	—	5	2	0	73	Sept. 18,	—	7	2	0
16	February	1821	5	1	0	74	Oct. 15,	—	7	1	0
17	March 12,	—	4	3	1	75	Nov. 12,	—	9	2	0
18	April 21,	—	5	2	0	76	Dec. 6,	—	7	3	1
19	June 7,	—	5	3	0	77	Dec. 30,	—	6	0	0
20	July 10,	—	6	0	0	78	January,	1826	7	1	1
21	August 14,	—	5	2	0	79	Feb. 23,	—	9	0	1
22	Sept. 13,	—	5	1	0	80	March 25,	—	8	0	0
23	October 15,	—	5	2	0	81	April 22,	—	7	2	1
24	Nov. 15,	—	5	2	0	82	May 20,	—	6	3	1
25	Dec. 16,	—	6	1	0	83	June 22,	—	8	0	0
26	Jan. 13,	1822	4	1	1	84	July 20,	—	9	3	0
27	Feb. 17,	—	5	3	0	85	August 28,	—	9	1	1
28	March 25,	—	6	0	0	86	Sept. 17,	—	9	0	0
29	April 30,	—	6	1	0	87	Oct. 13,	—	9	1	0
30	May 30,	—	5	3	0	88	Nov. 13,	—	9	1	0
31	July 4,	—	6	2	0	89	Dec. 10,	—	9	0	0
32	August 6,	—	6	2	0	90	Jan. 5,	1827	8	3	0
33	Sept. 9,	—	7	0	0	91	Feb. 4,	—	9	2	0
34	October 7,	—	5	3	0	92	Feb. 27,	—	7	0	0
35	Nov. 3,	—	6	1	0	93	March 27,	—	8	1	0
36	Dec. 5,	—	4	2	0	94	April 22,	—	8	3	0
37	Dec. 29,	—	5	2	1	95	May 18,	—	8	2	0
38	Jan. 19,	1823	4	1	0	96	June 12,	—	9	1	0
39	February 2,	—	2	2	0	97	July 8,	—	8	3	0
40	March 4,	—	5	2	0	98	August 3,	—	9	2	0
41	March 29,	—	5	2	0	99	August 29,	—	8	3	0
42	April 23,	—	5	3	0	100	Sept. 23,	—	9	0	0
43	May 20,	—	5	3	0	101	Oct. 18,	—	8	2	0
44	June 17,	—	6	2	1	102	November,	—	8	1	0
45	July 16,	—	6	2	0	103	December,	—	9	0	0
46	August 13,	—	6	1	1	104	January,	1828	8	3	0
47	Sept. 19,	—	6	2	1	105	February,	—	8	0	0
48	October 7,	—	7	1	0	106	March,	—	8	0	0
49	November	—	7	1	0	107	April,	—	8	1	0
50	Dec. 4,	—	7	2	0	108	May,	—	9	0	0
51	January 1,	1824	7	1	0	109	June,	—	7	3	0
52	Jan. 29,	—	8	0	0	110	July,	—	8	2	0
53	Feb. 22,	—	7	1	0	111	August,	—	9	0	0
54	March 21,	—	8	0	0	112	September,	—	9	1	0
55	April 18,	—	7	2	0	113	October,	—	7	3	0
56	May 16,	—	8	0	0	114	November,	—	8	3	0
57	June 15,	—	8	0	0	115	Dec. 5,	—	8	1	0
58	July 3,	—	5	1	0						

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POST MORTEM EXAMINATION.

The body was inspected about seventeen hours after death by Dr. Belcombe and Mr. Browne, Surgeon, of York, but in consequence of the friends of the deceased giving a reluctant consent and the time permitted being very limited, they were not able to examine the morbid parts so minutely as they could have wished.

The following statement Dr. Belcombe of York was so kind as to favour me with.

“The whole frame was in a very emaciated state, and the abdomen enormously distended; (notwithstanding she had been tapped ten days previously) a very large tumour filled up the lower part, extending above the umbilical region and into the left iliac. The peritoneum was very much thickened, and assumed the appearance and quality of gristle. The viscera were strongly adherent to it, and it was also difficult to detach it from the internal cavity; there was a considerable quantity of yellow gelatinous fluid amounting to several pints.

“On opening the cavity the tumour presented itself, and had the appearance of an immense pouch, extending from the pubic region to the umbilical, and attached to the peritoneum at its upper part by a ligamentous band, as well as having a considerable portion of the omentum fastened to it. In consequence of its bulk, the stomach was pushed upwards, the small intestines were pressed inwards, and the colon at its transverse part much distended. The liver in appearance was natural, strongly adhering to the peritoneum, and very much softened. The spleen was small and equally soft. Dark colored patches extended along the intestines. The kidneys were healthy.

“The tumour was next examined, which at first was thought to be the bladder, but on pushing the catheter through the urethra, that viscus was found to be small and empty. On examining, per vaginam, it was found to be the uterus morbidly enlarged, and dissecting it out as carefully as time and opportunity would permit, it was discovered to be full of hydatids, some of immense size, and containing altogether a prodigious quantity; I think I never saw any thing like it in any morbid dissection I have been present at, nor have I seen any thing like it in the Museums of London or Edinburgh.

“The os uteri and cervix seemed healthy, but immediately from thence the morbid appearance began.

“We had no means of ascertaining its weight, nor could we remove it unknown to the relatives, otherwise it would have made a very perfect and curious preparation.”

I have had under my care two or three other cases of Dropsy, one of which was first operated upon September 21st, 1819, and the operation was repeated for about two years at various intervals. The fluid usually evacuated amounted in quantity to four or six gallons, and the number of operations in that period were twenty-five.

Another case of a similar kind I operated upon, May 18th, 1822, and continued to remove the fluid by the same means to June 22nd,

1826. The fluid in quantity amounted to nearly the same each time as the last case, and the number of operations were nineteen.

In the last case there was not any particular appearance except in the last operation, when the fluid discharged presented a dark colored black appearance like tar, adhesions internally had no doubt taken place, as I was not able to evacuate the contents as heretofore by one perforation of the abdomen, but was obliged to introduce the trocar three times, once on each side, half way betwixt the symphysis pubis and the anterior and superior spinous process of the ilium, and once in the linea alba.

I had no means of making any post mortem examination of either.

In these latter cases however the frequency of the operation, though considerable, was not more remarkable than will have occurred in the experience of many practitioners.

The case of Mrs. H. however is, as far as I can ascertain, unprecedented. Instances of paracentesis abdominis having been performed fifty or a hundred times, are casually mentioned I believe by some writers, but not distinctly authenticated.

(Mead* refers to the cure of Lady Mary Page recorded on her tomb-stone in Bunhill Fields, who died in 1628, aged 61 years, "who was tapped 56 times in 67 months, and had taken away 240 gallons of fluid." Dr. James Bardsley† of Manchester, has also related a case in which paracentesis abdominis was performed 53 times, and the total amount of fluid evacuated was 174 gallons—the age of the patient was 60 years.—EDITORS.)

ART. XI.—*Observations and Cases on the Utility of Moxa in Neuralgia.* By J. A. COOPER, Esq., M.R.C.S. Bradford; late House Surgeon to the Leeds General Infirmary.

NEURALGIA FACIEI was for some time the only disease of the kind known to Pathologists, and nerves of the face appeared to monopolize all the morbid action to the exclusion of the rest of the nervous system, till more attentive observation and minute investigation enlarged the catalogue of neuralgic affections; and the subject has of late been so ably and amply illustrated, that a new province of great extent, diversity, and importance, may be said to have been discovered, and annexed to the empire of medicine.

The success of a particular kind of treatment in some cases of Neuralgia, and of failure in others, seems to favour the supposition that the same remedy has been administered in different modifications of the disease, and should this supposition be correct, it will shew the necessity of discrimination, in order to ascertain with some degree of precision, in which form or variety of the affection our various agents may be most successfully employed.

* *Monita Medica*, p. 150.

† *Edinburgh Medical and Surgical Journal*, vol. xxxi, p. 296.

The sub-carbonate of iron for instance has acquired a well-earned celebrity in some forms of Neuralgia, but its exhibition will often be unavailing in others, particularly in idiopathic inflammation of the nerve, a modification of the disease of very frequent occurrence, and one which will almost invariably yield to the application of the moxa.

It will not be considered irrelevant in this place to specify some of the causes of Neuralgia, as it may lead to a more correct prognosis, and a more rational mode of treatment. Neuralgia may arise from idiopathic inflammation of the nerves—acute or chronic.

From the irritation of inflammation in structures contiguous to the origin of the nerves, as the spine, &c.

From the irritation of morbid products, as tumors in the neck, axilla, &c., &c.

From the irritation of wounds, injuries, and the presence of foreign bodies.

From irritation in, or of, the alimentary canal and uterus, &c.

This communication is confined to Neuralgia arising from the first cause enumerated, a form of disease liable to be confounded and grouped along with a class of complaints usually designated rheumatic, or vaguely denominated muscular pains.

Inflammation of the sacro-ischiatic nerve usually begins with pain in the lower part of the back, preceded or accompanied with shivering, succeeded by heat, thirst, loss of appetite, diminished and unhealthy secretions. The pain soon extends along the course of the nerve to the vicinity of the hip joint, where it not unfrequently remains stationary for some time, conveying the impression to the mind of a hip-disease, this however will be found erroneous, as the motion of the joint is perfect, there is no pain upon pressure on the trochanter, nor any particular emaciation of the muscles of the part, signs which distinguish Neuralgia from inflammation of the hip joint. The divisions of the nerve afterwards become affected to their ultimate ramifications. Sometimes the pain is felt through the whole limb, and when the disease is developed in all its dimensions, it produces a paroxysm of suffering almost indescribable and insupportable. The exacerbations which commence towards evening throw the patient into an agony, and will wring groans and lamentations from the most heroic breast. The victim, from the almost interminable duration of the chronic form of the disease, becomes emaciated, the countenance is the picture of wretchedness, and indicates the presence of some more malignant disorder than the one actually existing, despair often haunts and harasses his mind, and one unbroken gloom overspreads his imagination.

The chronic form of the disease appears to bid defiance to almost every plan of treatment that can be adopted. Cupping, leeches, blisters, turpentine, tartar emetic, warm baths, carbonate of iron, &c. afford in some instances, none, and in others, only a transient mitigation from torture. In these protracted and severe cases, the moxa operates a surprising change; immediately on its application, it entirely subdues the pain of the nerve, which in some cases never returns,

when the metastasis is complete; in others the relief becomes permanent by establishing and perpetuating a discharge after the separation of the eschar.

Artificial moxa may be formed by immersing lint in a strong solution of the nitrate of potash, and after molding it into a cone and allowing it to dry, it will be fit for use. The application is made by placing the base of the cone over the affected part, and retaining it in that position till the whole is incinerated.

CASE I.—John Robinson, aged 32, by trade a wool comber, applied to me in the spring, 1827, for Neuralgia of the sacro-ischiatic nerve, under which he had laboured above six months, he was quite emaciated, from intensity of pain, loss of sleep and appetite. The remedies that were tried gave no relief till the moxa was applied, which immediately relieved the pain, and he was soon restored to his wonted health and vigour—he has had no relapse.

CASE II.—September 9th, 1827.—J. Hinchliffe, aged 50, has had severe pain along the whole course of the sacro-ischiatic nerve some months, which has greatly impaired his general health, no plan of treatment was of any avail till the moxa was applied behind the trochanter, when the relief to the parts contiguous was immediate; it required a repetition however before it became permanent in this part. The pain continued in the leg notwithstanding the application of moxa twice to the hip, this was also entirely removed by employing the same agent over the nerve.

CASE III.—Elizabeth Thomas, aged 43, has had severe pain in the sacro-ischiatic since December, 1828; in February, 1830, I applied a moxa behind the trochanter which gave immediate ease. The pain still continued in the leg, for which a moxa was applied below the knee and was followed with the same favourable result.

CASE IV.—May, 1827.—John Dobson, 45 years of age, complains of pain along the parieties of the chest, which he has felt for several years, and which has progressed in spite of all remedies. On examination of the spine, there was considerable tenderness of the superior dorsal vertebræ, to this part a moxa was applied with complete success.

Cases in confirmation of the efficacy of moxa in Neuralgia might be multiplied, but those briefly detailed will suffice to recommend it, as deserving of a more extensive trial. So uniform has been the success of its application in my hands, that it approaches almost as near to a specific, in that form of the disease under consideration, as bark is a specific in intermittent fever.

Bradford, July 1st, 1830.

ART. XII.—*A Sketch of the State of Medicine, and of Medical Schools and Institutions, in the United States of America, with some Statistical Observations.* By JAMES BLACK, M.D., Member of the Royal College of Physicians, London. Bolton.

As upwards of half a century has now elapsed, since the people of North America declared themselves independent of either the Government or tutelage of Great Britain, and assumed the right to rule themselves in all matters of state policy and education; it is natural that the course of science in general should follow, in some degree, the fate which civil polity, arts, and commerce have, during that period, experienced in the country. Though Medicine, like many of her sister sciences, forms one of the great republics of human knowledge, and within its own kingdom every where has been gradually emancipating itself from the *legitimate* degeneration of the medical dictators of old; still its progress and cultivation are not so far independent, as not to be affected, in a great measure, by the successive changes and the surrounding condition of political and civil society.

In North America, the cultivation and study of Medicine have been more or less modified, by the movements and alterations which the outward and internal order of Government has undergone, and continues to experience; and as the political structure of the country has now acquired much importance, and become consolidated over an industrious and enterprising race of people, so also has the study of Medicine become more cultivated, better systematized, and more independently followed, with respect both to the schools in Europe, and those in the neighbouring States of the Union.

The early settlers in New England having left their native country to avoid persecution on account of their religion, and to enjoy its free and undisturbed exercise in the wilderness, naturally conveyed with them those who could administer to them in holy things; and these pilgrim pastors, in order to render themselves more actively useful in an infant colony, and to eke out a scanty subsistence, beyond what the exercise of their sacred calling could procure, endeavoured to acquire some knowledge in the art of healing, before they left the shores of their mother country. These clerical physicians, who, also in some cases, added the humbler office of instructors of youth, were of great service to the first settlers, and in some of the first epidemics which afflicted the early settlements, have endeared their memories among the Puritan posterity, by their acts of usefulness.*

It was thus that the young colonies were supplied with medical assistance, until their growth held out some inducement to regular

* One Dr. Samuel Fuller, of this class, came over in the first ship, and in a letter to Governor Bradford, June, 1630, says, "I have been to Matapan, (now Dorchester,) and let some twenty of these people blood."—*Dr. Thacher's Medical Biography, Boston, 1828.*

practitioners to emigrate from the mother kingdom. Between this period and the revolution, the more eminent practitioners in America had either been natives of Great Britain or Ireland, and licentiates or graduates of the schools there, or elsewhere of Europe ; or, being sons of the more wealthy colonists, had received their education in this country, and returned with academical honours to practise in their native land. Several, however, who had risen to celebrity in their profession, were at first auspiciously introduced into the country, under the wing and patronage of the colonial governors, as their medical attendants, and continued to turn their introduction to a permanently good account, when either their patrons died, or retired from their official situations.

The establishment of Harvard College in Massachusetts in the year 1638, and that of William and Mary in Virginia in 1691, in the course of a short time after they were each erected, sent a number of their young graduates in letters to complete their medical education in the schools of Europe, in order that they might qualify themselves respectably to practise in their native colonies. Of this early class of physicians are recorded the names of Bellingham, Saltonstall, Hoar, Glover, Chauncey, and Rogers ; the three last of whom were, at different times, presidents of the College at Cambridge, from the year 1650, to 1684. A Dr. Zabdiel Boylston of this class was the first who, in 1721, inoculated the small pox in America, on his own son, and, during the subsequent year, 247 more persons ; for the introduction of which blessing beyond the Atlantic, he was at the time execrated as a murderer, and a bill actually passed the State legislature prohibiting the practice under severe penalties.*

Notwithstanding the above mentioned advancement in the cultivation of medicine, it is recollected in America, when it was not uncommon for a skilful surgeon to ride one or even two hundred miles, to perform a capital operation, and so late as the middle of the last century, a patient afflicted with the stone actually crossed the Atlantic to have the operation of lithotomy performed by Cheselden,† at London. Medical libraries had no existence in the country, and the first medical periodical that was published in America was towards the close of the last century, at New York, by Drs. Mitchell, Miller and Smith.‡ Among the earliest publications on medical subjects in the country was an Essay on Fevers, by Dr. John Walton, published at Boston, in 1732 ; and the first record of the dissection of a human body for the purpose of imparting medical knowledge, was that of a criminal, by Drs. Bard and Middleton, and who was executed for murder at New York in 1750. To show the gradual dawning of the day of science on the transatlantic hemisphere, the first medical lec-

* Hutchinson's History of Massachusetts, vol. ii.

† Dr. Thacher's Medical Biography.

‡ The first Newspaper published in America was the *Boston Newsletter*, begun in 1704, by B. Green.

tures are considered to be those given by Dr. William Hunter, a native of Scotland, and educated under the elder Monro, who gave lectures on anatomy at Newport, Rhode Island, in the years 1754, 1755, and 1756.

The first Medical School in the American colonies was projected by Drs. William Shippen and John Morgan, and was instituted and confirmed by the Trustees of the College of Philadelphia in 1765. Four years afterwards, the celebrated Rush was chosen Professor of Chemistry at this seminary; and it has since enumerated among its professors a succession of men eminent in science, and exalted in private and public character.

The New York School of Medicine was organized in 1768, in connection with King's, now Columbia college; and in 1770 the first medical degrees, which were conferred in America, were at this school—being a short time before those which were given at Philadelphia the same year.

These two Medical Schools were the only ones instituted before the Revolution, and that of Harvard at Boston during that distressing and eventful period in 1780. Though the larger towns were, before that time, and until a more settled period of affairs, tolerably well supplied with the better educated class of practitioners, most of whom had completed their education in Great Britain, yet it must be supposed, that the settlements in the interior and the smaller communities would be left, as they often were in older countries, to the medical care of those, who had picked up a bare smattering of the art from living under the clinical tuition of the city practitioners, or of those who aspired to apply their intuitive knowledge of medicine for the benefit of themselves and their neighbours.

The stirring period of the revolution suspended the institution of any seminaries of learning, as well as the erection of medical schools; the camp and campaigns in the forest became the great nursery of practical graduates; and many of the most eminent of American practitioners and teachers in subsequent times, received the rudiments of their medical education in the field, or were attached to the army. So great was the scarcity of surgeons in the revolutionary armies, wherein much epidemic and fatal sickness at times prevailed; and so diffused and intense the ardour of all to serve their country, that many respectable physicians relinquished their private and profitable practice, and devoted their services to the care of the sick and wounded in their long, and harassing campaigns. Several practitioners of still more heroic devotion, took up arms in the cause of their country: such were Dr. late Governor Brooks, of Massachusetts; Drs. Freeman, and Mercer; not to forget Dr. late Major-General Warren, who fell at the battle of Bunker's-hill. Others who had less relish for the field, or whose talents were more valued in the senate, than in wielding the sword, engaged in the more difficult and delicate undertaking of legislating for their dismembered country; and, besides some whose services were only known in the different conclaves of the Convention, as Dr. Mc. Cling, of Virginia; the famous declaration of independence contains the name of Rush.

With the exception of the above-mentioned, and the small medical school which was opened at Dartmouth, in New Hampshire, in 1798, which was under the sole professorship of a Dr. N. Smith, for twelve years, and who taught all the separate branches of medicine, no other seminary for the purposes of medical science was erected until the year 1807, when the college of Maryland, at Baltimore, was founded. Notwithstanding the growing wants of the public, and the much increased population, the struggle of the revolution was long felt in the consequent exhaustion of pecuniary means, and the pursuits of reviving trade and commerce engrossed too much of the energy and resources of the States and individuals, to permit the erection and encouragement of schools of science and literature. Since 1807, a great progress has, however, been made in the formation and organization of medical schools throughout the Union; and no less than fifteen additional colleges and schools have been since instituted, for the study of medicine and surgery, and for conferring degrees, through virtue of the different charters granted by the several States, or under the authorities and privileges of the colleges to which the schools are attached.

It may, therefore, be interesting to exhibit a list of the whole schools, with their localities, years of erection, number of students and graduates, and also the number of professors' chairs in each, collected as far as could be from the Journals of the States and personal inquiries, during last Spring, in the country, from the most recent and best sources of information.

MEDICAL SCHOOLS, &c.

NAMES AND LOCALITIES.	Where Instituted.	No. of Professors	No. of Students.	No. of Graduates	in what year.
University of Pensylvania, at Philadelphia .	1765	6	400	80	in 1830
Medical School, New York	1768	6	84	17	in 1830
Medical School Harvard College, Cambridge .	1782	5	60	25	in 1830
Medical School Dartmouth College, Hanover	1798	3	80		in 1827
College of Medicine of Maryland, Baltimore .	1807	7	150	50	in 1830
College of Physicians and Surgeons, Fairfield, } Herkimer County, New York }	1812	5	120		in 1827
Medical School, Yale College, Newhaven . .	1813	5	61		in 1829
Medical School of Ohio at Cincinnati . . .	1818	4	22		in 1827
Vermont Academy of Medicine, Castleton .	1818	6	124		..
Medical School of Transylvania, Lexington, } Kentucky	1819	6	235		..
Medical School of Maine, Brunswick, Maine	1820	3	60		..
Med. School of Brown University, Providence	1821	4	40		..
Medical School of the University of Vermont } Burlington	1822	4	42		..
Berkshire Med. Sch., Pittsfield, Massachusetts	1822	6	94		..
Medical College of South Carolina, Charleston	1824	7	50		..
Medical School of Jefferson College, at Philad.	1824	6			..
Columbia College, at Washington, D. C. . .	1824	6	30		in 1830
Medical School at Auburn, New York . . .	1825	5			in 1827
Medical School, Valley of Virginia, Winchester	1826	4			..
Rutgers Medical College, at New York . .	1826	5	120	25	in 1830

The above tabular view will probably surprise many of the profession in this country, who may not be conversant with the rapid strides which our Transatlantic brethren are making in the career of modelling schools of medicine, as well as many other useful and benevolent institutions. The number of schools for teaching medicine and surgery exceed, it may be said, the whole number of chartered and private schools for the same purpose, which are in Great Britain and Ireland, containing a population above a half more than the United States. The number of students are, however, much below the total studying medicine in this country, being computed, last year, not to exceed 1700 throughout the whole States,* which will occasion a reduction of about twenty per cent on the numbers stated for 1827. The number of yearly graduates may be roughly reckoned at about one-fifth of the whole students.

The increase of schools in the States, during the last twenty years, is not so much owing to the wants of the public, (for the older seminaries have continued to be filled with zealous, industrious, and many of them with very eminent teachers in the profession,) as to the rivalry of the several States; each State, constituting a kingdom within itself, is emulous to equal, if not outvie its neighbour in every thing that can conduce to make a community of people rich, intelligent, and independent. Being internally governed by its own laws, and the expenses of conducting its affairs being defrayed by its own treasury, the State requires only the legislative voice of its people to found any institution, and endow it with as many privileges as they think proper, and to the extent which they conceive the wants, wishes, or means of the public demand or can afford. It is from this feeling of State rivalry, that many benevolent institutions in America have been erected and supported with an ardour and liberality that are quite admirable; and whenever the legislature of any of the States can be moved by the petitions of the medical public, or the offer of funds, they grant a charter for a school, and empower the faculty attached, or the college from which the medical scion has sprung, to grant degrees, on conditions equal to those of the other States. It follows from the same spirit continuing to operate, that more schools will be instituted in the newer States of the West; and even the territory of Michigan will, in a few years, enrol its medical college with those of the South and East; claiming the privilege of dispensing the highest honours in medicine on the borders of the wilderness; while the swamps of Louisiana will send forth their annual corps of graduates, armed against the yellow fever, and all manner of tropical diseases.

Multiplied as are the schools of medicine in the Union, it is notwithstanding computed that, besides 10,000 physicians, there are above 15,000 practitioners of medicine, many of whom never heard a public lecture, nor saw a demonstration in anatomy.†

* Harper's Northern Traveller, fourth edition, 1830.

† Professor Lewall's first Lecture at the opening of Columbia College, District Columbia, March, 1828.

The curricula of education are nearly alike in all the schools, with a few exceptions ; and as there is but one qualification or degree in medical honours granted, the terms of study are nearly the same. This uniform or republican scale of study is produced, in a great degree, by the older and more eminent schools fearing to raise the curriculum of study, lest the economical and utilitarian spirit of the young aspirants should repair to a seminary where less experience and knowledge are required, but where the same nominal honours are to be procured, while the newly erected schools cannot well curtail the customary course of study, being already limited enough : besides, a shorter term than those of their seniors, would be consigning their seminaries to a lower repute than those of their neighbours. In this respect, the political fabric of society has extinguished all grades of academical honours in medicine, as it has done in the profession of the law ; and as no honorary ranks are recognized in society, so the province of medicine only acknowledges a republican uniformity. The denomination of Doctor is not only the vernacular and genuine appellation for all the labourers in medicine, surgery, and pharmacy, as it is commonly in the mother country, but the degree of M.D. is the only one which is granted by the several faculties. A candidate for the Doctorate is required to have attended only two courses of each of the different professors at any one school ; or one course at any other chartered school, and one at the school or college where the graduation takes place. These courses consist each of four months, and they commence each year on the 1st of November, and terminate about the 1st of March following. The candidate is also required to have been engaged in the study of medicine for three years, under some respectable practitioner or regular physician, which time may or may not include the seasons of attendance on lectures ; and he must be twenty-one years of age. In a few States, as Massachusetts, the term of study, under a regular practitioner, is two years ; but another must elapse before the candidate can be examined. In extraordinary cases, the medical professors there, with the consent of the president, may dispense with one course of lectures ; and at Philadelphia, as shall be noticed hereafter, a very useful exchange has been made, for one year's study under a practitioner, by an additional term of lectures during the summer.

The candidates, before examination, are also required, in all the schools, to prepare one inaugural dissertation on any medical subject in the English language, to be submitted to the faculty of the college previously, and defended at the public examination, which annually takes place, and is called the *commencement*, after the termination of the winter course of lectures.

There are no such modes of entering the profession in the States as by apprenticeship. The independent spirit of the young republicans would not submit to be the bondsman of any one of the profession, to serve him by "night and by day, Sunday as well as Saturday," or to wash out dirty vials, and to post up his ledger. No—the written engagement to do such offices, under penalties however small, would be compromising, in their opinion, their individual

independence, and be considered as derogatory to their exalted notions of professional dignity. They only submit themselves as pupils, or more correctly, as students, for the term of two or three years, paying from 50 to 100 dollars annually, to be admitted into the office, not called surgery, of the regular practitioner.* Their attendance at the office is neither regularly given nor required; and a great many of the young debutants fashion their attendance according to their pleasure and convenience, but they are always expected to be present, when the teacher gives his familiar hebdomadal prelections, or examines them on the progress of their medical reading. This reading of medicine, like reading of law in this country, may sound a little strange, and misapplied, in the ears of some British practitioners. There is, however, little practical or pharmaceutical knowledge to be acquired in the offices, as the practitioners seldom prepare or dispense any medicine at their houses, in the large towns, and the pupils have little or no useful access to the bedside of their teachers' patients, until the last year of their term of study, when the most respectable and trustworthy only, may be admitted to the charge of a *labour*. In fact, the pupils of a practitioner save him very little or no personal work and attendance; as all patients in the States are very jealous of being neglected, or remanded over to the care of any substitute or pupil. None of the pupils either sleep or are boarded in the family, except they are near relatives; so that the practitioner is often or generally deprived of any aid they may afford him, for fourteen hours out of the twenty-four.

This system has its advantages, in some respects, over the very objectionable length of apprenticeship enforced by the Apothecaries' Act, in this country; but the controul of the teacher over his pupils is perhaps never so strong as to enforce and instil into their minds those habits of industry and application, which it is so necessary for a student in medicine to acquire. Many young men, however, in America, undertake the study of medicine, not as a means to obtain a future livelihood, or from any ingenuous love of the profession, but merely as a liberal acquirement, which may at some time afterwards be useful to them, and give them a little learned celebrity among their fellow-citizens, whereby their progress to the senate may be promoted. For it is not an unfrequent case to find some of the ablest of both the States and the United States legislators to be medical men; and Doctors are nearly as common

* This appellation is a little puzzling at first to a stranger; for instance, on calling in a physician, the reply at the door may be, "Not in, but at the office." Which office? is rejoined; "His own, sir," is the answer. The application of some other words is also remarkable, and, at first, misunderstood. An eminent physician on the introduction of a foreign one to him, says, "Pray, Dr. —, where are you at present *located*?" At the City Hotel, is replied. "O, I mean, where do you practise?" is the clearer recapitulation. The participle, *prostrated*, is very intelligibly used for confinement in bed, or to the recumbent posture in sickness or indisposition.

designations at a Table d'hôte, or on board a steam-boat, as the more gallant ones of Colonel and General. Many of the young men also from the slave-holding States, study medicine, through the economical view of prospectively saving their estates the expenses of medical attendance on their negroes, which charges may amount from three to five hundred dollars annually. So great also is the demand for professional men and others of intelligence, in the rapidly increasing population of the west and of their towns, getting up like the gourd of Jonah, that to be arrayed with lancet and potion, and a fair skill to use them, are as good qualifications to an emigrant on the look-out for a snug portion of land, as the axe is to the shoulder of the New England woodsman, when seeking to lay out the foundation of a second Indiville.

The schools of New York, Philadelphia, Baltimore, and Boston, may be considered the leading medical seminaries in the country; being the first established, and having professors of great eminence, many of whom have been and are well known to the medical world in Europe. These I shall cursorily notice in their order, with some observations relative to the institutions and statistics connected with them.

NEW YORK.

From the time the medical school in this city was organized, it has undergone many modifications, and its progress has been at times much interrupted by professional feuds and rivalships. The incorporations of the college of physicians and surgeons were at frequent conflict with the medical faculty of Columbia college; and it was only after a union between them, in 1813, that the school, supplied by the most eminent teachers of both, began to enjoy a consolidated reputation. It then also received the undivided support of the State, which has made a grant of 20,000 dollars at one time for the benefit of the medical college. The class of students for several years consisted of two hundred, and was gradually increasing each season, when new causes of schism and disorder again arose, and continued to operate among the medical corps, till, in 1826, a final explosion took place, and the professors tendered their resignations to the regents of the university, which were accepted. This separation reduced the number of students in this seminary in 1826-7 to 84; though the different professorships were filled up with men of talent and respectability in the profession. To mention the names of Dr. Smith, in anatomy; Dr. Stevens, in surgery; and Dr. Beck, in materia medica, will be sufficient to show how well the school was provided.

The seceding professors, however, immediately instituted a school in connection with Rutger's chartered college, in New Jersey, and located it, as they say, in New York. The first session of this new school enumerated 153 students, and last season they were 120, of whom about 25 received the degree of M.D., under the charter of Rutger's college; though it is contested by some, that degrees thus granted by a branch of a college, located in another State, are not valid.

This new school has the very eminent services of Dr. Mott, in surgery;* Dr. Mc. Nevin, in materia medica and pharmacy; Dr. Francis, in obstetrics; and Dr. Griscom, in chemistry; who is well and favourably known to scientific men in Europe, and more particularly throughout America, by the impartial and very instructive publication of his *Travels in Great Britain and on the Continent*. He also has the foreign department in the editorship of *Silliman's Journal of Science*. The chair of anatomy had, till last year, a great acquisition in the late highly talented Dr. Godman, whose name will be deservedly dear to science, from his works on the *Natural History of America*. His late students will long remember the ardour and devotion with which he taught them the structure of the human body, by always dissecting the parts at public lecture, as he condemned the method of previous dissection for the dramatic exhibition of the lecture hour. His chair is filled, I am happy to find, by a native of this country, well known as a clever surgeon, Mr. Bushe, from Dublin.† Drs. Hossach and Mitchell, two eminently well-known names to the reading profession in this country, are likewise attached to this school, as president and vice-president.

In Rutger's school, which is a plain, ample, and convenient building, in the centre of the city, there were, last winter, about twenty subjects used in the theatre and dissecting rooms. This seems a small supply, where they can be easily procured at about ten dollars each; but as dissection is not an imperative part of the curriculum for a degree, none but the truly zealous in their education, blunt their scalpels or soil their fingers in the business. The anatomical museum is only forming, and the morbid part is chiefly the collection of Dr. Mott's practical labours. An ingeniously contrived table, with a multitude of levers and springs, stands in the theatre, and was invented by the late Dr. Godman.

The old medical college is a very common, dark, and inappropriate building, situate next door to a first-rate hotel; and during a visit to it, I had an opportunity, through the polite introduction of Dr. Stevens to his brethren professors, of witnessing the final passing of the graduates of the year. There were about sixty students in the hall, of whom seventeen were honoured with the degree. This faculty also grants licenses to practice after one season's attendance at lectures; and sometimes without any lectures, if the candidate has been four years under a practitioner in the country. The hall, this day,

* Dr. M. bids fair to have his name enrolled among the most heroic sons of the scalpel, having excised the lower jaw, half or in part, four times, three of which successfully, for osteosarcoma of the bone; and has performed the same operation for a similar disease, on the upper jaw, upwards of eight times, the last of which, a most serious operation, was in June last, and with perfect success. He has also successfully amputated at the hip joint for necrosis, tied the carotid artery six times, the external iliac three times, and the femoral artery fifteen times; but the boldest triumph in surgery, performed by this gentleman, was the successful tying of the common iliac, in March, 1827.

† Mr. Bushe, in last April, tied the common iliac in an infant two months old, for an aneurism in the left labium. The child was doing well a week afterwards.

was a miniature of the Senatus of our Scotch universities. The private examinations had previously taken place before the different teachers; and, on this last occasion, the candidate was only called upon to explain his thesis, and to be examined on any collateral point by the professor, whose province embraced the matter of the dissertation. The examinations and replies were on a par with those current, about twenty years ago, before the college of surgeons in Edinburgh, for their diploma, making allowances for the general progress in the science since that time; and the professors, in several cases, appeared desirous to avoid finding the candidate at fault, and evaded pushing him too far, lest he might break down. This the candidate might do intellectually, but the American youths are not easily discomfited, either morally or physically. One or two held a few most unsupported opinions, especially one, on the chemical nature of respiration, who impugned the conclusions of Allen and Pepys without mercy. The conclusion, in each case, like many similar exhibitions in this country, was, the examiner handing the thesis over to the president, declaring that the gentleman had acquitted himself well, and produced a respectable thesis. These *essais d'ecole* were all written in English, except one, on Iritis, which was in proof sheets.

The examinations at Rutger's medical school are similar to those at New York college; and the graduates must previously have the same qualifications, and are vested with the same powers to practise.

For the protection of professional interests, to discourage and prevent quacks and unqualified practitioners, as well as to promote a medical brotherhood and correspondence throughout the State of New York, there is an incorporated State medical society. Before any one can legally practise, he must first have the license of this society, or else exhibit his qualifications, for the purpose of being enrolled as a regular member of the profession. The regular practitioners are also protected by a penalty of at least five dollars, for any intromission of practice by an unqualified person in the State; but the growing spirit of democratic liberality, and the crying down all monopolies, had nearly rescinded this law last spring, and will, no doubt, soon sweep it away from the statute book.

To take cognizance of professional matters, and to keep the society in useful superintendence over the practice in the State, there are district censors annually appointed, four of whom reside in the city, and the rest are stationed in three other separate districts. The fees of all practitioners are regulated by the society, and those established by the associated physicians and surgeons of the city of New York, and approved by the society, are the following. The exchange value of the dollar may be reckoned at 4s. 2d. sterling; and I make no doubt, that the many nice distinctions of surgical skill and labour, will be interesting to the profession on this side of the Atlantic.

NEW YORK MEDICAL FEES.

	DOLLARS.
Verbal advice . . . from	0 to 15
Letter of advice . . .	10 to 15
Ordinary visit . . .	0 to 2
Consultation do. . . .	5
After visits, each . . .	3
Night visit	7
Visit, per mile, distance . .	1½
Visit to Staten Island . . .	10
Double in winter or in a storm	
First visit in epidemic or other diseases, where personal danger is apprehended . . .	5
Each succeeding, under same circumstances	3
Vaccination	5 to 10
Each dressing of wound . .	1 to 5
Cupping	5
Bleeding in arm or foot . .	2
Do. in Jugular vein . . .	5
Dressing blister	1
Scarifying eye	5
Puncturing œdematous swellings	2
Inserting seton	5
Do. issue	2
Visit in haste, to be charged double	
Detention, per hour . . .	3
Do., per day	25
Introducing catheter . . .	5
Do. do. each succeeding time	2
Do. in females	5
Extracting calculus from urethra	20 to 30
Reducing simple fracture . .	10 to 20
Do. compound fracture . . .	30
Do. dislocations	5 to 20
Do. do. of the hip . . .	30 to 50
Reducing prolapsus ani . . .	5
Do. hernia	10 to 25
Amputation of breast . . .	50
Do. leg	50
Do. hip or shoulder . . .	100 to 150
Do. finger or toe	10
Do. penis	20
Extirpation of testis . . .	50
Do. of eye	100
Do. tonsils	25
Do. tumour	5 to 50
Perforating rectum	25
Do. nostrils, ear, vagina, or urethra	5 to 25

	DOLLARS.
Opening abscess	1 to 5
Dividing frenum linguæ, or penis	3 to 5
Paracentesis abdominis . .	15 to 25
Do. thoracis	50
Operation for the tic douloureux	25
Do. for hare-lip	25
Do. for hernia	125
Do. for fistula perinei . . .	50
Do. do. in ano	50
Do. for phymosis	10
Do. fistula lachrymalis . . .	40
Do. paraphymosis	10
Do. wry neck	50
Do. depressing cataract . .	125
Do. extracting do. . . .	150
Do. popliteal aneurism . . .	100
Do. carotid aneurism . . .	200
Do. for inguinal or external iliac	200
Do. brachial	0
Do. radial, or ulnar	25
Lithotomy	150
Bronchotomy	25
Trephining	100
Circumcision	10
Common case of midwifery	25 to 35
Tedious or difficult labors	36 to 60
Case of Gonorrhœa	15 to 30
Do. syphilis	25 to 100
Preparing and giving enema . .	2
Visit for opinion, involving a question at law, and in which a physician may be subpoenaed	5
Extracting tooth at patient's house	2
Do. at the Surgeon's	1

PHARMACEUTICAL CHARGES.

A simple prescription furnished . .	½
Pills, per dozen	¾
Boluses, each	½
Electuaries, per ounce . . .	1
Infusions, per pound . . .	2
Solutions, per pound . . .	1½
Tinctures, per ounce . . .	½
Ointments and cerates, per ounce	½
Blisters according to size 1½ to	2
Decoctions, per pound . . .	2
A single medicine dispensed without visit	1
An anodyne draught	½

Bolton, 17th August, 1830.

(To be Continued.)

DISPENSARY REPORT.

ARDWICK AND ANCOATS DISPENSARY.

ART. XIII.—*Physical Condition of the Poor.* I. Diet.
*Gastralgia and Enteralgia, or morbid sensibility of the
 Stomach and Bowels.* By JAMES PHILLIPS KAY, M.D.,
 Physician to the above Institution. Manchester.

EXTERNAL agents exert so powerful an influence upon physiological phenomena, both in health and disease, that we cannot be too minute in observing their operation, and recording their effects. The greatest and most various advantages may be anticipated to accrue through the whole range of medical science, by the diligent prosecution of this method of inquiry. We may thus be enabled, for example, to explain the origin of many maladies hitherto referred solely to a constitutional diathesis: we shall perhaps, ere long, discover, that some affections, confounded under the general appellation *scrofulous*, may occur in any constitution, and result from the combined operation of peculiar external agents, more frequently, than from any singularity in the idiosyncrasies of the individual subjected to their influence.

Investigations of this nature may be useful, also, in proving that similar morbid results are produced by a great variety of causes, and by comparing the mutual resemblance and difference of diseases, and the various modes of treatment necessary, in consequence of their peculiar origin, their nature may be considerably illustrated.

The differences in *physical* comfort which occur in the successive grades of society, from affluence, ease, and luxury, down to indigence, labour, and want, powerfully influence the constitution, and we may expect corresponding varieties in the maladies incident to the higher and lower ranks, which will demand not less variety in the manner of their treatment.

The district, through which the Ardwick and Ancoats dispensary extends the benefits of its charity, is chiefly inhabited by a dense mass of pauper population. With solitary exceptions, every dwelling is a cottage. Only one wide street intersects the district; the rest are narrow, generally unpaved, and often worn into deep ruts, and sometimes impassable from mud, ashes, and disgusting ordure. The population is employed in the different branches of the cotton trade and its dependencies, but chiefly in weaving and spinning. It is our intention, at some future period, to glance at some of the peculiar influences of this employment, but, at present, we principally intend to confine ourselves to the effects of those domestic habits which prevail among some lower grades of the operatives.

No diseases present themselves more frequently in the practice of this district, than those accompanied by a morbid sensibility of the stomach and intestinal canal. The phenomena which accompany these maladies have attracted so much attention, in the writings of

Mr. Abernethy, Dr. Saunders, and Dr. Paris, and have recently been so faithfully delineated in the admirable monographs of M. Barras, Dr. James Johnson, and Dr. Wilson Philip, that it would be superfluous to attempt, in this place, any detailed description of the symptoms generally; our purpose is chiefly to record a few facts relative to the origin and treatment of these diseases in the poor, which may be usefully contrasted with their causes and appropriate remedies, when they occur among the affluent.

Before the patients present themselves at the Dispensary, the preliminary symptoms have generally disappeared, and the disease has assumed a decided form. The features express either a gloomy hypochondriacism, or a morbid restless irritability. The tongue is generally deeply furred in the centre, and especially towards the root, and red at the tip and edges. The mouth is filled with a clammy mucus—emits a disagreeable odour—and the breath is hot, and loaded with vapour. The patient complains of headach, clouded vision, giddiness, a sense of want and feebleness, sometimes approaching to syncope. The bowels are generally, though not always, constipated, but their constipation is seldom obstinate, and they are distended with flatus, which escapes by constant eructation, and has, in various degrees, an offensive odour, which, in some aggravated and alarming cases, resembles that of sulphuretted hydrogen gas. The patient complains of pain in the region of the stomach, generally described as a constant gnawing sensation, increased by pressure. The occurrence of a violent paroxysm is often accompanied by a collapse of the features, clammy perspiration, a small and feeble pulse, and retraction of the abdominal muscles. In the severer forms of the disease, the patient sometimes rolls about in agony, and the sensations resemble in character those which accompany the passage of a gallstone through the cystic duct, or even, in some cases, the pain of cancer of the stomach itself. In the milder and more common forms of this affection, the pain is often described as extending into the hypochondria along the edges of the false ribs: sometimes it is more fixed upon one side than the other: frequently, tenderness is discovered on gentle pressure at the pyloric extremity of the stomach—in the duodenum—or throughout the whole course of the colon. Sometimes the sensations may be described as those of uneasiness rather than of pain. The patient is conscious of irregular and peculiar feelings in the epigastrium; a sense of fulness, of weight, of creeping, of formication, or pulsation, is described. The appetite is generally destroyed; food excites nausea or vomiting; even a scanty meal occasions a great disengagement of gas; or the digestive process is accompanied by the formation of acid, and consequent *heartburn*, acrid eructations, and constriction of the pharynx and fauces. Irregular retrocedent actions of the gullet sometimes return portions of the food into the mouth, without the effort of vomiting. After a free evacuation of the stomach, the patient is generally for some hours relieved. Pyrosis frequently accompanies the disease, and generally occurs in the morning. The bowels are torpid, and the character of the secretions poured into the intestinal

canal is often much impaired. The evacuations become of a dark-green color, or even of an inky blackness, and are extremely fetid. The stools often contain a viscid concreted mucus, either tinged with the biliary secretion or of a white color; occasionally undigested alimentary accumulations and scybalæ; sometimes, in severe and protracted cases, peculiar anomalous formations, whose character is little understood, are mingled with the dejections.

Whilst this state continues, the patients lose flesh; the features are sharpened; the skin becomes pale, leaden colored, or of the yellow hue which is observed in those who have suffered from the influence of tropical climates. The strength fails; all the capacities of physical enjoyment are destroyed; and the paroxysms of corporeal suffering are aggravated by the horrors of a disordered imagination; till, in the case of the poor, they lead to gloomy apprehension, to the deepest depression, and almost to despair. We cannot wonder that the wretched victim, invited by those haunts of misery and crime, the gin-shop and the tavern, as he passes, in shivering and desponding feebleness, to his daily labour, should endeavour to cheat his suffering of a few moments, by the false excitement procured by ardent spirits; or, in the delirious dreams of a continued debauch, to forget the thoughts of destitution, hunger, and uninterrupted toil, destroying the remaining energies of an enfeebled constitution. Nor need we attempt to describe how rapidly the evils which he suffers have accumulated, when he again becomes conscious of his misery.

One phenomenon which we have occasionally observed, in combination with the distressing symptoms of this disease, deserves a more detailed description. In the progress of the complaint, the mucous membrane of the intestines, in some cases, appears to suffer great functional derangement, and eliminates a fluid which occasions strange and alarming symptoms. We are confirmed in this opinion, because the morbid impression of which we shall speak has, in some cases, occurred at periods, when there is no reason to expect any action in the liver and other abdominal viscera; as at midnight, when no food has been taken for many hours, and when, therefore, the stimuli, which ordinarily excite the action of these secretory organs, are absent: in many cases, however, this peculiar fluid is, doubtless, poured from their ducts.

A patient has, during a certain period, suffered all the ordinary symptoms of dyspepsia, aggravated by gastralgia, and a general morbid sensibility of the stomach and bowels: the character of the secretions has been deranged, but afterwards corrected by an administration of the appropriate remedies. Actual pain has been subdued, and the morbid sensibility of the abdomen apparently diminished; the appetite has in a degree returned, and the patient has even, in some instances, regained a little flesh and strength. Suddenly, in the evening, at midnight, or towards morning, no excess nor irregularity of diet having been indulged, a marked physiognomical change ensues. The features slightly collapse, the lips quiver, and the muscles of the cheek are contracted; or a lowering expression pervades the countenance. The patient suddenly becomes

irascible and petulant, and vents an uncontrollable impatience on his most attached friends. A restless suspicion haunts him, or he bursts into ungovernable rage. This paroxysm may continue ten minutes or a quarter of an hour, when it is followed by a general collapse, marked by faintness, pallor of the countenance, coldness of the extremities, feebleness of the heart's action, or even, in rare instances, syncope. At other times, the patient having retired to rest, sinks tranquilly into repose, and his sleep continues for some time placid. After a slight restlessness, he wakes with an expression of terror, or of undefinable but irrepressible inquietude; he utters some disjointed sentences, rises hurriedly from his bed, and sinks exhausted upon the floor of his chamber. In other instances, the paroxysm is much milder in character, but equally evident to those who have been accustomed to witness it. A morbid expression pervades the physiognomy; its hue appears changed and clouded; the spirits sink at once from cheerfulness to despondency, accompanied by feebleness, or a sense of great exhaustion, like that produced by the poison of tobacco; and the patient is borne to his chamber in an extremely languid and exanimate state.*

Some hours generally elapse after these alarming preliminaries; the patient continues sometimes oppressed and languid, or, at others, restless and irritable, when the bowels commence evacuating a dark green fluid, or an inky secretion mingled with mucus, streaks, or greater quantities of blood, and exhaling, in the cases which we have observed, an almost intolerable fetor of sulphuretted hydrogen gas. Frequently, six, eight, or even more stools follow each other, rapidly filling two or three ordinary chamber utensils, and leaving the patient in a state of extreme exhaustion.

At other times, the contents of the bowels are not suddenly evacuated. Instructed by the peculiar character of the symptoms, when no stool has been voided after the lapse of some hours, and the premonitory signs of extraordinary peristaltic action being absent, we have administered a gentle purgative, as castor oil, which has procured two or three copious dejections of this singular excretion. Generally this fluid has continued to flow into the intestinal canal, and has been evacuated for several succeeding days. We have found calomel given in very small doses, and repeated three or four times a day, in conjunction with the extract of rhubarb, or the compound rhubarb pill, more effectual than any other medicine, in altering the nature of the secretion. After this administration has been continued two, three, or four days, the most healthy biliary stools have suddenly appeared, not preceded by evacuations graduating through any of the intervening shades of color. The change has, at other times, been more gradual, especially when the functions of the liver have seemed considerably deranged, and the motions

* In one unhappy, but most interesting case, (occurring in private practice,) a lady, the wife of the sufferer, was always able to discriminate this paroxysm from every other combination of symptoms, and to predict the consequences with certainty.

have passed through darker and lighter shades of green and pale yellow, until they have, at length, assumed the ordinary fæcal hue. Sometimes, these paroxysms have been accompanied by the vomiting of a coffee-colored fluid from the stomach, which is by no means an invariable sign of cancer :* we have observed it in the cases of patients who have eventually recovered. In one fatal example, attended by the morbid phenomenon described above, we were induced to suspect that the disease degenerated from a functional malady, into one depending upon some structural change, which terminated in ulceration of the mucous coats of the stomach and duodenum. During the progress of the complaint, a sudden effusion of a bloody fluid, resembling the lochial discharge, had occasionally occurred. Unhappily, at length, after great improvement, which however scarcely deceived the attendants, even by flattering their hopes, a great quantity of blood, of a venous hue, which coagulated in the vessel, was suddenly effused into the intestinal canal. This happened at the hour when the paroxysm usually commenced, and on the ensuing evening, at a somewhat later period, similar symptoms presented themselves, and life was immediately extinguished. But these are extreme and alarming forms of the disease, which are rarely encountered in this severity, though, from their peculiarity, deserving delineation; and it is also proper to add, that the examples which

* Andral, in the fourth volume of his *Clinique Medicale*, On Diseases of the Abdomen, devotes a chapter to the consideration of the following question: "*Des symptômes spéciaux distinguent-ils le cancer d'estomac des autres lésions de cet organe?*" The lancinating pain which authors generally give as a diagnostic sign, he considers to be but seldom a symptom of this disease, and that it has been admitted as such only by analogy, from observing what occurs in cancer of the mamma. He has discovered the most extensive cancerous disorganization in cases which had not been accompanied by pain. If the symptoms of chronic gastritis and of cancer be compared, there will be found nothing either in the character or the intensity of the pain, by which these two affections can be distinguished. He had thus witnessed cases in both extremes: he had seen individuals who had during life suffered from no symptom of gastric disease, excepting anorexia, or, at most, a little uneasiness after taking food, but in whose bodies were discovered vast cancerous ulcerations in the interior of the stomach, or an extensive scirrhus induration of its parietes. On the contrary, he had seen persons who suffered a much greater pain in the epigastrium, after having eaten, who frequently vomited acrid fluid, or their food, and in their stomachs nothing was discovered excepting "un épaississement rouge, brun ou ardoisé de la muqueuse, ou bien un ramollissement plus ou moins considerable de cette même membrane." The nature of the fluid vomited is not a sufficient guide. Hæmatemesis and the rejection by the mouth of fluids resembling infusions of soot or coffee, though they frequently accompany cancer of the stomach, often attend changes in this organ of a very different character. He had often seen them—first, in persons in whose stomachs was discovered only a little injection or softening of the mucous membrane, with an induration of the subjacent tissues. Or, secondly, in others, whose mucous membrane was in a state of hypertrophy, and of a grey or brown color; the subjacent tissues remaining at the same time healthy. All general symptoms are even more unsatisfactory.

"Il suit de ces considerations que, hors le cas où une tumeur se fait sentir à travers les parois abdominales, il n'existe aucun signe certain pour distinguer ce qu'on appelle, dans le langage médical ordinaire, un cancer d'estomac, de ce qu'on appelle une gastrite chronique."—*Andral. Clinique Medicale, Tome iv. Maladies de l'Abdomen*, p. 429.

we have witnessed, occurred in very protracted, neglected, and aggravated cases.

The preceding remarks contain only a slight sketch of the symptoms of morbid sensibility of the stomach and bowels: but we feel less dissatisfaction on this account, as the profession is universally in possession of the admirably faithful delineations before referred to, particularly those of M. Barras and Dr. James Johnson.

In the district of the Ardwick and Ancoats Dispensary, this disease prevails amongst that class of operatives which receives the smallest remuneration for its labour, and is consequently the most imperfectly nourished.

Many classes of spinners, particularly those employed in the production of fine yarn, obtain excellent wages. They are generally a respectable,* and intelligent body of men: they are more regular in their habits, and are able to obtain better food, and enjoy larger, and better furnished houses, than any other part of the surrounding population. Many causes have, however, tended to diminish the price of labour amongst other classes, and particularly the weavers. A vast immigration of Irish operatives, capable of subsisting on the lowest diet, and in the meanest habitations, has, within a short period taken place. Their houses are always scantily furnished and dirty. A single bed often accommodates a whole family, and sometimes a heap of filthy straw, and a covering of old sacking, hide them in one undistinguished heap, debased alike by penury, want of economy, and dissolute habits.

The introduction of the power-loom, though ultimately destined to be productive of the greatest general benefits, has occasioned some temporary embarrassment, by diminishing the demand for certain kinds of labour, and consequently their price. The hand-loom weavers still continue an extensive class, and earn only from six to ten shillings per week. Some classes employed in the mills (in the card rooms) obtain only from seven to twelve or fourteen shillings per week; and many others, unconnected with them, do not earn more.†

The whole population employed in the various branches of the Cotton Trade, (and amongst them, those lower classes from whose diet and habits the disease which we have attempted to describe takes its origin) rises at five o'clock in the morning, works in the mills from six till eight o'clock, and returns for half an hour or forty minutes to breakfast. This meal generally consists of tea or coffee, with a little bread. Oatmeal porridge is sometimes, but of late rarely, used and chiefly by the men, but the stimulus of tea is preferred and es-

* Much praise must be bestowed on many of the owners of fine mills, for the institution of several wise and benevolent regulations, which have promoted these auspicious results.

† Some families are assisted by the wages obtained by their children, who are admitted, at the age of nine, into the cotton mills, and who constitute a great proportion of the "*hands*" employed. Those classes to whom we particularly refer, derive little pecuniary aid from this source.

pecially by the females.* The operatives return to the mills and work shops until twelve o'clock, when an hour is allowed for dinner. The dinner is greedily devoured. It generally consists (amongst those who obtain a low rate of wages, and with whom alone we are here concerned) of boiled potatoes. The mess of potatoes is put into one large dish, melted lard and butter are poured upon them, and generally a few pieces of fried fat bacon are mingled with them, and but seldom a little meat. The family sits round the table, and each rapidly appropriates his portion on a plate, or, they all plunge their spoons into the dish, and, with an animal eagerness, satisfy the cravings of their appetite. Some families provide a greater proportion of bacon or other animal food, but those who are most subject to gastralgia seldom taste flesh meat; and the quantity consumed by the labouring class in general is not great. At the expiration of the hour they are all again employed in the work shops or mills, where they continue until seven o'clock or to a later hour, when they generally again indulge in the use of tea, often mingled with spirits, accompanied by a little bread. Oatmeal or potatoes are, however, taken by some a second time in the evening.

The comparatively innutritious qualities of these articles of diet are most evident. We are by no means however prepared to say that an individual living in a healthy atmosphere, and engaged in active employment, in the open air, would not be able to continue protracted and severe labour, without any suffering, whilst nourished by this food. We should rather be disposed, on the contrary, to affirm that any ill effects must necessarily be so much diminished, that, from the influence of habit, and the benefits derived from the constant inhalation of an uncontaminated atmosphere, during healthy exercise in agricultural pursuits, that few, if any, cases of gastralgia could be attributed to this cause. But the population nourished upon this aliment is crowded into one dense mass, in cottages separated by narrow and almost pestilential streets, in an atmosphere loaded with the smoke and exhalations of a large manufacturing city. The operatives are congregated in rooms and work shops during twelve hours in the day, and engaged in an employment which absorbs their attention, and unremittingly employs their physical energies. Under such circumstances, how nutritious soever the aliment might be, the digestive process would be comparatively more difficult, than in the healthful employments of the agriculturalist. That much must be attributed to the qualities of the diet is obvious, since comparatively few cases of gastralgia present themselves amongst that class, chiefly consisting of fine spinners, which receives better wages, obtains a simple and better diet, and whose members are more regular in their habits. Meagre food cannot fail, in the circumstances related above, to derange the process of chylifaction, to disorder the digestive organs, and to impair the functions and morbidly increase the

* The tea is almost always of a bad, and sometimes of a deleterious quality; the infusion weak, and little or no milk is added.

organic sensibility of the stomach and intestinal canal, thus inducing Dyspepsia, Gastralgia, and Enteralgia. It cannot also be concealed, that these complaints are aggravated by that fatal indulgence in the immoderate abuse of ale and spirits, and particularly of the latter, which is the prevailing crime of the lower orders.

When a case of Gastralgia presents itself at the Dispensary, the diet and habits of the individual can almost invariably be predicted.

The mode of treatment adopted, and its uniformly happy result, justify the preceding opinions concerning the origin of the disease. The first precept enjoins an immediate change in the diet. If, from poverty, the patient is unable, or, from inattention, neglects to attend to the advice in this respect, the remedies fail to produce a favourable result, or the case is exceedingly protracted. The patients are enjoined to take three meals in the day—a breakfast, consisting of milk or rice milk, and stale wheaten bread, at the usual hour—a dinner, of a few ounces of animal food, and stale wheaten bread, without any vegetable—and, in the evening, a supper of milk and bread. These directions are of course occasioned by the incapacity of the poor to afford any other diet, which could be obtained with equal ease, and would be equally simple, mild, and nutritious. When the bowels have been torpid, and fæcal accumulations may be suspected in the colon, the necessary evacuation of the contents of the intestinal canal is procured, at the expense of as little irritation as possible, by the administration of a mild purgative. If, however, considerable torpidity of the colon continues, these remedies are aided by enemata. Sometimes great irritability of the stomach exists, and then we depend upon enemata for all powerful purgative effects; changing the nature, and regulating the frequency of their use according to the symptoms. Enemata are not permitted to supersede mild alterative purgatives, administered by the mouth. The secretions are generally depraved, the functions of the abdominal viscera impaired, their activity frequently diminished, and they require the continued use of small doses of purgative remedies capable of gradually exciting a more healthy action, without occasioning any inordinate activity and consequent irritation. Small doses of calomel; or the mercurial pill, combined with two grains of the compound rhubarb and colocynth pills, and extract of hyoscyamus we have found efficacious. Brisk purgatives occasion an immediate aggravation of all the symptoms. The morbid sensibility of the stomach and bowels becomes an intense and enduring pain. Spasmodic actions of the intestinal canal and abdominal muscles occur, the bowels retain their contents obstinately, and an agonizing struggle ensues, in which the patient rejects the contents of his stomach, and frequently swoons. Paroxysms of pain, whether arising from this cause, or occurring in the course of the disease, have been almost immediately relieved by rubbing upon the abdomen for twenty minutes or half an hour, before a warm fire, from half an ounce to six drachms of the compound camphor liniment, combined with an equal quantity of laudanum.

The morbid sensibility of the stomach, after the use of these

remedial means, is most effectually removed by the application of blisters to the epigastrium, or of the tartar emetic plaster. Even the pain attending cancer of the stomach we have seen controlled, and for a time alleviated by counter-irritation, and in gastralgia, no remedy procures such immediate remission of the tormenting sensations endured by the patient.

The morbid sensibility of the stomach appears to be soothed and allayed, and the disposition to the secretion of an acid, or of the limpid fluid of pyrosis, and the formation of irritating compounds, during the digestive process, have been diminished by the use of the subnitrate of bismuth, and the alkalies, particularly the subcarbonate of soda. These remedies may be prescribed in almost all cases without prejudice, and generally with marked benefit.

When the functions of the stomach and intestinal canal have been restored to a more healthy state, we are accustomed to commence the administration of small doses of sulphate of quinine, combined with purgative medicines, and gradually to increase the quantity, until ten or more grains are taken in the day. If commenced too early, and without proper caution, an increase of irritation ensues, but by waiting until the pain is gone, and the irritability allayed, and then increasing the dose, with a due regard to the symptoms, the most beneficial results may be obtained; a great accession of strength, a restoration of the tone and healthy action of the bowels, and a rapidly increased nutrition. In the adoption of the plan of practice delineated in the foregoing sketch, the writer was guided by experience alone, before he became acquainted with the admirable works to which he has referred, and in recommending it, he disclaims all pretensions to originality, being desirous only of confirming the important practical principles, which have been advanced by previous authors.

These distressing affections are often complicated by others, which, if they do not immediately depend upon them, are nevertheless frequently removed by remedies appropriate to them. Neuralgia, especially that painful variety distinguished by the expressive name of *tic douloureux*, seems to be often intimately associated with dyspepsia, and a morbid sensibility of the stomach and bowels. In such cases the epigastric region is often discovered, on slight pressure, to be tender; the appetite is impaired; gastralgia sometimes ensues after errors of diet; a sense of faintness, nausea, or gastric uneasiness precedes the occurrence of a paroxysm of neuralgic pain, and frequently a fit of gastralgia either accompanies or alternates with the morbid sensations of the face or limbs. When these symptoms have been combined, we have always successfully combated the disease as far as the removal of pain is concerned, in an exceedingly short period, and have subsequently restored the impaired health of the patient, by the system of regimen and medicinal treatment described above. We have applied the blister to the epigastrium, rather than to the nucha; have gently evacuated the bowels; prescribed alterative aperients, in conjunction with hyoscyamus, the subnitrate of bismuth and alkalies; ordered a strong opiate liniment to be applied to

the face, and prescribed large doses of sulphate of quinine, which has been occasionally combined with small quantities of the acetate of morphine.

Many nervous diseases are aggravated by, or originate in, this state of the chylopoietic viscera. When the stomach and bowels labour under an increase of their organic sensibility, and are irritated by the presence of depraved secretions, fæcal retention, or the imperfect digestion of innutritious diet, that irritation is reflected upon the nervous system. Pain is experienced in various regions of the spinal column, and frequently tenderness of one or more vertebræ. Epilepsy and hysteria, especially in young females, are frequently complicated with the abdominal and spinal symptoms, and are relieved by remedies which evacuate noxious secretions, and correct morbid actions in the secernent viscera of the abdomen. We have lately seen a succession of cases, which have powerfully impressed us with this opinion.

Chorea is often dependent on abdominal irritation, occurring in a constitution of great nervous excitability. The secretions are generally, in this disease, discovered to be exceedingly morbid. The bowels are very torpid. The stools are sometimes of an inky blackness, and very fetid. The abdomen is distended by fæcal retention and flatus. There is often great tenderness on pressure upon the region of the stomach or colon, and a train of symptoms indicating severe functional derangement of the abdominal viscera. Amongst the poor, this disease often directly arises from bad nursing, innutritious diet, inattention to the ordinary evacuations, fæcal accumulation, and consequently a rapidly increasing morbid sensibility of the stomach and intestinal canal. The purgative system frequently aggravates the complaint by increasing the irritability of the bowels. A case lately occurred in the practice of the Dispensary, which illustrates these opinions. The patient was a girl, ten years of age, well developed, and of an excitable nervous temperament. Her father was a weaver, who obtained seven shillings per week for the support of three children and his wife, who was then far advanced in pregnancy. Their diet was, therefore, of the most innutritious kind. She had been perseveringly treated by the administration of the ordinary purgative remedies, and the use of issues in the back, guided by superior skill and minute attention. The bowels had become irritable; three slimy stools were evacuated daily, without medicine. There was extreme tenderness in the region of the stomach: the convulsive motions became violent, on any considerable pressure on the abdomen. The patient was exceedingly emaciated: she slept little: the motion, when awake, was perpetual: every voluntary muscle was agitated: the tongue could not be protruded from the mouth, and she could not utter a syllable, but expressed her wants by an inarticulate cry. She could not sit upright, partly from weakness, and partly from the constant convulsive motion which agitated her. Guided by these symptoms, we ordered her diet to be rapidly improved. Her parents were enabled, by the benevolence of a gentleman in the neighbourhood, to accomplish this. She took as much

beef tea at dinner as she desired, with stale wheaten bread soaked in it, and a breakfast and supper of milk and bread. In a few days she was allowed some porter, or two or three spoonfuls of wine were mingled with boiled sago and arrow-root. As soon as she could masticate, animal food was administered, and dry wheaten bread. A liniment was prescribed, consisting of equal parts of laudanum and the compound camphor liniment, a table spoonful of which was assiduously rubbed, by gentle friction, continued twenty minutes, on the abdomen, and repeated four times in the day. The sulphate of quinine, in combination with a small quantity of the acetate of morphine, was prescribed: she commenced with four grains in the day, which dose was gradually increased to ten. Under this treatment the evacuations became natural and less frequent; the abdominal tenderness disappeared; the convulsive movements gradually subsided; and the power of articulating words returned. She gained strength every day, and in a few weeks was a healthy girl, capable of rendering efficient aid in the exigencies of her father's family.

Some other forms of affections of the stomach and bowels may afford subjects for a future communication. In attempting to illustrate the influence of a peculiar diet, we have selected one of the most common affections of these organs; and one which, since it is often the preliminary step towards more serious functional or even organic changes, first deserves our serious and attentive consideration.

ART. XIV.—*Case of Spontaneous Lactation, at an advanced age.* By
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THE following curious and interesting, although not unprecedented case,* beautifully exemplifies the power of sympathy or maternal feeling in re-exciting to action long disused secretory organs.

Mrs. B. wife of John Breward, Simpson-green, near Idle, aged forty-nine, has borne eight or nine children, the youngest of whom is about twelve years old. About a year ago she lost a daughter-in-law, who died of puerperal inflammation about a fortnight after confinement of her first child.

On her death Mrs. B. took the charge of the infant—a little, puny, sickly baby. The child was so fretful and uneasy, so averse to taking any kind of food, and so troublesome, that Mrs. B. after several sleepless nights was induced, by way of soothing, to permit her to take the nipple of her breast into the mouth—the child was pleased and soon sunk to rest, and the old lady of course continued to give her this cheap and innocent sedative, from time to time. In the course of from thirty to thirty-six hours she felt very unwell, her breasts became extremely painful, considerably increased in size, and soon after, to her utter astonishment, the lacteal fluid was secreted, and poured forth in the same abundance as on former occasions after confinement of her own children.

The child now a year old, is a fine healthy, thriving girl, and only a few days ago I saw her eagerly engaged in obtaining an apparently abundant supply of healthy nourishment from the same fountain, which nearly twenty years since poured forth its resources for the support of her father.

Mrs. B. is a stout healthy woman, and has continued to menstruate regularly, both since weaning her last child, nearly eleven years ago, and during the time she has suckled this little grandchild.

* Vide Philosoph. Trans. vol. ix. 1674; also Do. Do. by Dr. Slack, vol. xxxi. 1739.

PART II.

RETROSPECTIVE ANALYSIS.

SYDENHAMI OPERA.

THERE is an evil connected with the multiplication of books, from the influence of which, we fear, that even the votaries of medical literature are not exempt. The prolific creations of the press too often engender habits of superficial reading and desultory research, while they withdraw the attention from the labours of past ages, and excite a morbid appetite for splendid novelties.

It is thus, that the writings of Hippocrates, and Sydenham, and Morgagni, and Haller, like the unrivalled poetry of Spencer, Milton, and Dryden, and the immortal prose of Bacon, Hooker, and Barrow almost disappear under the accumulating mass of contemporary productions, many of which, with high pretensions to originality, are found on careful examination, to be only new announcements of truths long since developed.

Amidst the rise and fall of opinions, and the temporary popularity of works, which rapidly sink into oblivion, the literature of our profession may still boast of its few classical authors, whose productions bear the impress of immortality, however they may be slighted by our wayward and inconstant tastes. The writings of the venerable fathers of our profession, are valuable, not only for the solid information they contain (deformed as it too often is by vain hypotheses, and ponderous erudition), but because they help to mark distinct eras in the history of medical science, serving as landmarks in the progress of discovery, instructive by their very errors and extravagancies, while they are luminously illustrative of those great principles of philosophising, by which alone genuine knowledge can be advanced in every age.

With these views, we think we shall not be rendering an unacceptable service to our readers, if we occasionally invite their attention to some of those remarkable works which are entitled to the honourable appellation of *medical classics*.

In the annals of British medicine there is no name so distinguished as that of *Sydenham*, the great reformer of the English school, the influence of whose practical views has been extensively felt, not only in our country, but wherever the healing art has been elevated to the dignity of science. We shall therefore endeavour in the following retrospect, to present to our readers a brief summary of the practical views of our great *modern Hippocrates*, as well as of those logical principles by which he was governed, and which, both by precept and example, he so powerfully recommended.

Justly to appreciate the merits of Sydenham, it is necessary to glance at the previous history of medical science. The origin of

medicine, like that of all the useful arts, is deeply involved in the obscurity and fable of antiquity. It however cannot be an inquiry of much grave importance to ascertain who was the first physician, or by what accident mankind became acquainted with the sanative resources of nature. A pure empiricism was undoubtedly the form in which the medical art would exist for many ages. By the early Greeks it was elevated to the rank of a speculative science, the principles of which were for the most part fallacious, being deduced from modes of reasoning quite inapplicable to the functions of the living body.

In the midst of that brilliant constellation of talent which adorned the age of Pericles, appeared *Hippocrates*, one of those miracles of genius which are permitted to arise at remote intervals of time, by whom, the science of medicine was not merely greatly advanced, but suddenly *created*, and impressed with a character of *comparative perfection*, which commanded the implicit homage of many succeeding ages, and may justify the astonishment and admiration of modern times. To the writings of that remarkable man, we propose to direct the attention of our readers at some future opportunity. It is sufficient to remark at present, that their value will be most accurately appreciated by those who possess the deepest experimental acquaintance with the medical art, who will be often surprized by the graphic power and fidelity of his delineations of disease, and the almost oracular sagacity of his prognostics. So true was he to Nature, that after the lapse of more than two thousand years, we may recognize in his descriptions, the same phenomena which transpire in our daily experience. But the writings of Hippocrates are chiefly valuable for *the philosophic spirit* which pervades them, and for the admirable illustrations they afford of the right methods of prosecuting medical inquiries. Though constantly appealing to experience, his views were very far removed from a system of bald empiricism. He was not satisfied to derive general principles and practical axioms from a few fortuitous—incoherent facts, but from investigations, guided by the rules of the severest logic. In language worthy of the great modern Father of Inductive philosophy, he says—“We ought fully to understand that it is not by *probable reasoning* that the physician can arrive at truth, but by *experience*, conjoined with *reason*, for reason is a kind of memory which arranges those things which are perceived by the senses; for if out of those facts which are plainly seen, reasoning takes its commencement, it will be found to keep within the capacity of the mind itself, if however it takes its departure from a mere figment of the understanding, it terminates in a conclusion injurious to truth.”*

Nor is this a solitary sentiment in the writings of the Cooan sage. It is repeatedly announced, and is visible by its practical tendencies in various parts of his works. Simple and obvious however as it appears to us, it was strangely overlooked even by the immediate successors of the great Father of medicine.

* Hippocratis Præcept, p. 61.

Instead of pursuing the safe and natural method of investigating the functions of health and the phenomena of disease, it accorded better with the pride of philosophy to penetrate at once into their occult causes, and to arrive at direct explanations by the aid of hypotheses founded on certain arbitrary analogies and accidental resemblances. Medical science, like every other part of physics, became blended with dialectical subtleties, or shadowy mysticism; and a disputatious spirit most uncongenial with the progress of that kind of knowledge, which can be derived only from practice and experience, infected the several schools of medicine.

Theology could scarcely have enumerated at any period a greater number of sects, more widely differing in their views, or animated by a more intense spirit of mutual hostility.

The reveries of the Platonists and Peripatetics, of the Stoics and Epicureans, no less than the disputes of the Methodists, Dogmatists and Pneumatics occupy a large space in the early history of medical science. Even Celsus whose classical writings exhibit an advanced state of chirurgical knowledge (that department of the healing art which received the earliest cultivation) was not the least ardent of the sectaries. As however it is probable that the illustrious Roman was acquainted with the medical sciences only as a department of general physics, and not as the object of professional pursuit, we must attribute his errors to the defective state of the healing art amongst the Romans, of which his writings present a faithful transcript.

At about the close of the second century appeared *Galen*, a prodigy of erudition, and not less remarkable for the boldness of his imagination. No individual could have been better qualified to be the founder of a new sect, or by a bolder species of dogmatism to succeed in supplanting those systems of elaborate error, which had hitherto divided the homage of the learned. To be the leader of a new school was, in those days, the most splendid reward to which the ambition of a philosopher could aspire, and in reference to such a distinction no one could have realized a larger share of glory, than was allotted to the physician of Pergamus. During thirteen centuries at least, to have disputed his authority, would have been considered the height of presumptuous folly and heretical daring: and not even Aristotle, in the wide realms of moral and physical science, reigned with an authority more despotic than did Galen, in the circumscribed province of theoretical and practical medicine. The materials out of which he constructed his new system were derived chiefly from the apocryphal writings of Hippocrates, the works of Plato and Aristotle, and the creations of his own fervid imagination. We cannot help admiring the force of that genius, which from elements thus heterogeneous, could educe a theory of such apparent symmetry, as to command universal belief and adoption:—while we regret, that to the cause of genuine science the gigantic powers, and consummate learning of Galen were utterly lost, for want of more rational views of the nature and objects of philosophical inquiry.

In reviewing the history of medicine, it has been usual to acknowledge its obligations to the Arabians, by whom the light of knowledge was cherished during the long night of European barbarism, designated by the appellation of "the dark ages." With the exception however of some pharmaceutical improvements, and the introduction into medical practice of a number of mineral and vegetable substances, at that time imperfectly known, we are of opinion, that in the hands of the Arabians, our art remained almost stationary. Out of their innumerable and ponderous works, how few useful facts may be extracted. The very celebrity of Rhazes' description of small-pox, an almost solitary example of original semeiography, affords a presumption that the *natural* history of disease was little cultivated by that remarkable people, whose physicians, instead of availing themselves of the lights of observation and experience, were engaged in heaping up laborious commentaries on Galen or Aristotle, to whose authority they deferred with an implicit and blind veneration.

The restoration of literature in the course of the fifteenth century, formed the commencement of a more auspicious era in the history of our science. The human mind suddenly awakened to a consciousness of its long suspended powers, seemed to enter on a new career of enterprize and labour.

To the interests of practical medicine however, the transition was not unaccompanied by serious evils. Ancient works multiplied by the newly discovered art of printing were eagerly sought, and those of Galen became for a short time the universal text-book. The writings of Hippocrates also had some admirers who raised a feeble opposition to the disciples of the more popular master. By their discussions, unhappily, truth was not elicited, new hypotheses were framed, the vicious spirit of system and of sects was revived, and the authority of mere names reinforced. About the commencement of the following century, the dominant Galenism had to encounter a most formidable opposition, in the system of the rival school of Paracelsus, whose speculations though wild and extravagant, were in no slight degree rendered attractive and imposing, by the recently discovered lights of chemistry. The opinions of the Galenists were openly ridiculed and opposed by the new sect, the Chemists, and if, for some time after the commencement of the contest, real science was not advanced by their collisions, the *uniformity of error* was interrupted, and the tyranny of prescription destroyed.

By the successful labours of Galileo, Kepler, and Descartes, a new and most productive field of physical investigation was thrown open; and the votaries of medicine were invited to take their part in its cultivation. Here however a new impediment presented itself to the progress of our science. The successful application of the experimental method, and of mathematical demonstration to astronomy and mechanics favoured the illusory attempt to explain the phenomena of the animal economy by the laws of mechanism. Geometrical propositions, derived from bodies whose various relations may be

made the subject of direct experiment, were introduced to elucidate the composite system of the human frame, in all its unknown conditions.

The discovery of the circulation of the blood by Harvey, early in the seventeenth century, contributed most powerfully to terminate the expiring influence of Galenism. As the first fruits of regular experiment, and careful induction, it exhibited the most splendid promise of a future rich harvest of discovery, which was to reward the industry of diligent cultivators.

Contemporary with Harvey, and not less powerful by preceptive wisdom, than *he* had been by actual example, was the illustrious Father of modern science, to whose comprehensive view the entire expanse of human knowledge seemed unfolded—whose singular honour it was to be the legislator, *though not the tyrant*, of the whole intellectual world—the immortal Bacon.

To whatever arbitrary divisions we may reduce the several departments of physical and moral science, there is in truth a pervading principle of unity, and hence the maxims and rules of philosophical inquiry which are useful, in one kind of knowledge, are applicable to every kind. In the sound, and natural instructions of the “*novum organum*,” we recognize not a code of aphorisms for the benefit of any particular science, but a system of logic—adapted to the promotion of the widest range, and apparently the most discordant varieties of truth.

To adjust them to the medical sciences would require no unusual effort of ingenuity, for if there be a portion of knowledge to which they are peculiarly and obviously adapted, it is that which relates to inquiries involving the functions of health, and the phenomena and treatment of disease. How strikingly is this sentiment illustrated in the exordial paragraph of the mighty master, in which, with an air of severe and dignified simplicity, is propounded a truth, which lies at the basis of all genuine science—a truth, which had it been at all times distinctly perceived, would have preserved philosophers of every kind from a thousand illusory pursuits, by which their energies have been wasted, and their expectations foiled. “Man, the servant and interpreter of Nature, understands and *reduces to practice* just as much as he has *actually experienced* of Nature’s laws, *more* he can neither know nor achieve.”*

The nature of that kind of experience which can alone subserve the interests of true knowledge, the severe character of philosophical observation, and the necessity of purifying every statement from such sources of error, as are to be found in the fallacies of testimony and the ambiguities of language are stated with a distinctness and energy, which will be appreciated more highly *by no class of individuals*, than by the philosophical cultivators of medicine. It would be easy to prove that the progress of our art has been greatly retarded by those more secret sources of delusion which are peculiar

* Nov. Org. vol. i.

to the mind itself, those “idols” of “the tribe,” of “the den” and of “the market,” to the blind adoration of which, no class of philosophers have been more deeply enslaved.

The medical sciences however were not left to the mere influence of general precepts, alike applicable to every province of inquiry. Though not himself a physician, it was the singular distinction of Bacon to delineate those sources of error and deterioration by which the labours of physicians in all ages had been accompanied—and with a degree of accuracy and fidelity which if not superhuman, has never been equalled by any of the votaries of medicine themselves;—probably from the circumstance that they are unconsciously biassed by some of those very professional prejudices, which are most faithfully described, by an unprofessional observer. In “the Advancement of learning,” we recognize the views of our great intellectual Reformer, in reference to the peculiar impediments which have opposed the progress of medical science. Who will not, even in these days of boasted discovery and mental illumination, coincide in the justice of the doctrine, that “medicine is a science which has been more professed than laboured, and yet more laboured than advanced, the labour having been rather in circle than in progression.” “For I find” says Bacon, “much iteration, but small addition.”

The principal causes which had retarded the advance of philosophic medicine, were,

I.—The discontinuance of the Hippocratic method of recording the symptoms and history of cases. Such a register, which should neither be so ample as to receive every common case, nor “so reserved as to admit none but wonders,” is an indispensable preliminary.

II.—The neglect of necroscopical examinations, or in the figurative language of Bacon, “of tracing the footsteps of disease.”

III.—The practice of pronouncing some diseases incurable, “whereby they do enact a law of neglect, and exempt ignorance from discredit.”

IV.—The arbitrary and complex nature of medical prescriptions.

V.—Inordinate reliance upon what are called specific remedies.

“It is order, pursuit, sequence and interchange of application which is mighty in nature, which though it require more exact knowledge in prescribing, yet is recompensed by the magnitude of its effects.” He proceeds to recommend his new organum as the best means of renovating the Appolinarian art.

It would be irrelevant, to the present part of our inquiry, to attempt to shew the bearing of the Inductive method, on the prosecution of the study of medicine: and we refer chiefly to the writings of Bacon, from their direct, historical relation to that improved aspect which our art assumed, under the cultivation of Sydenham, as an art founded on observation and experiment.

Nothing could be more fatal to the tyranny of sects, whether in philosophy or in physic, than the enunciation of a purer system of logic, a system, consisting not of a series of formal and pedantic rules, but of principles derived from the very constitution of things, and the truth of which was most felicitously illustrated and recommended, by

a rich assemblage of contemporaneous discoveries. The spirit of observation and experiment was now in its “youthful fervour,” and it remained for some individual to render a service to the science of medicine, similar to those which had been yielded to general physics, and the philosophy of mind, by our immortal countrymen, Newton and Locke; and it was the proud distinction of the same age, and the same country, to provide in the person of Sydenham a philosopher of kindred spirit, whose labours have been scarcely less beneficially exerted in that department of human science to which his energies were devoted. It was during the troubles and commotions of the republic, in whose army he was an officer, that our illustrious countryman appeared. Though he commenced his academic career at a late period, he prosecuted a long course of study, first at Oxford, and afterwards at Montpelier, whose University, at that time, possessed a degree of medical reputation similar to that which for the last century has honourably distinguished the university of Edinburgh.

At a very early period of his studies, he seems to have imbibed a profound contempt for the scholastic methods of philosophizing which still prevailed, and to have discovered indications of that independence of thought which qualified him in a special degree to be the reformer of his profession.

His estimation of the prevailing medical authorities, is ironically conveyed in the well-known anecdote given by Sir T. Blackmore, who having consulted him as to the best books which, as a student of physic, he might read, was recommended to study Don Quixote, intimating that the writings of the learned were as replete with romance—as inconsistent with the sobriety and reality of ordinary life, as was the hero of Cervantes. From his general depreciation of medical works, however, Hippocrates was at all times an exception. Of the merits of the great father of physic, he never speaks but in terms of the highest eulogy, constantly referring to him as the chief model of the medical character—for want of sufficient attention to whom, the healing science had been continually lapsing into the extravagancies of error, or, at best, had remained almost stationary.

Speaking of the “never-enough extolled” sage of Coos, he says, “the theory of this eminently judicious physician, not being deduced from the trifling sallies of a wanton imagination, like the dreams of distempered persons, exhibits a genuine history of the operations of nature in the diseases of mankind. Now his theory being no more than an *exact description of nature*, it was highly reasonable that he should aim in his practice, only at relieving nature by all the means he could employ; and hence, likewise, he required no more of art, than to assist nature when she languished, and to check her when her efforts were too violent, and to accomplish both these ends by the steps and methods whereby she endeavours to expel the disorder; for this sagacious observer found that nature alone terminates dis-

tempers, and works a cure with the assistance of a few simple medicines, and sometimes without medicines at all.”*

We have already adverted to the coincidence which subsists between the logical views of Hippocrates and those of Bacon. But it was by the influence of the latter, aided by the rising spirit of experimental inquiry, that Sydenham was led not only to perceive the beauty and soundness of the Hippocratic method, amidst the meretricious attractions of splendid hypothesis, and elaborate systems of scientific imposture, but to enter himself upon the same career of patient and rigorous investigation, by the successful prosecution of which, he has earned the proud appellation of *the second Hippocrates*.

When he commenced his academic career at Oxford, the new philosophy had just begun to excite attention in that ancient seat of learning, where the doctrines of Aristotle had long held an undisputed possession, and within whose precincts they found the most impregnable intrenchments; when, in reference to the world at large, their despotic influence had been renounced.

The minds of men were also at that time intensely excited by those strange public commotions which transpired from the battle of Edge Hill to the Restoration; and a mind like that of Sydenham could not fail to imbibe that independence of thinking which characterized, in an extraordinary degree, the political party with which he was connected.

Of the private history, or the personal friends of our author, we have little information. From his works alone, a few incidental details may be gleaned, one of the most interesting of which is, that he enjoyed the friendship of Locke, himself a skilful physician, and whose approbation of the “*History of Acute Diseases*,” afforded Sydenham no inconsiderable delight.

The works of Sydenham are not voluminous. His most considerable production, and that to which our brief comments will principally apply is, his “*Observationes Medicæ circa Morborum Historiam et Curationem*,” the first edition of which was published about the year 1666. One of the most important parts of that work is the Preface, which may be regarded as a compendious system of medical logic, in which our author proclaims his hostility to sects and systematizers in physic, and recommends, on the authority of Hippocrates and Bacon, the adoption of the true philosophic method of interrogating nature. To read the book of nature with attention and docility, he conceived, was a far more profitable exercise, than to explore the distorted representations of her, which were to be found in the pages of the erudite master.

The first step in the improvement of the science was obviously to collect a general and natural description of all diseases, not only arranged according to their generic characters, but like a botanical classification exhibiting their specific differences.

* Sydenham Pref.

That the facts with which the study of medicine is conversant, are to a certain extent susceptible of the same process of generalization which we apply to other provinces of natural history is attested, by the exact correspondence observable between the delineations of disease which occurred to the early fathers of the science, and the results of modern experience. If a few varieties have disappeared like those extinct species of animals and plants, whose existence is perpetuated in the fossils of the museum, an essential identity may be traced. The great outlines of disease are the same in all ages and situations, though it admits of innumerable circumstantial diversities, arising from climate, seasons, the varying habits of society, and the peculiar constitutions and idiosyncracies of individuals.

Every statement of disease should also be copious and minute, and restricted to the description of phenomena. From such histories should be rejected with the most scrupulous fidelity all previous conjectures and hypotheses.

How forcibly does our author describe a class of writers whom it would have been fortunate for the interests of medical science, had they been peculiar to its early progress, whose works, often rich in erudition, remarkable for research, and replete with important facts, are speedily consigned to oblivion, from the disgust which after a short-lived popularity, is inevitably inspired by the heterogeneous admixture of fiction.

Of these writers, he remarks, "If any symptom suiting their hypothesis does in reality belong to the disease they are about to describe, they lay too much stress upon it, as if nothing more were wanting to confirm it; whereas on the contrary if it does not agree with their hypothesis, their manner is to take no notice of it at all, or barely to mention it, unless they can by means of some philosophical subtilty adjust it thereto, and bring it in some measure to answer their end."

Every philosophical account of disease, should enumerate not only the peculiar and constant phenomena, but such as are accidental and collateral, including those which are referrible to the age, sex and constitution of the patient, those *which arise out of the remedies which have been employed*, and those which depend on the existing season, or prevailing constitution of the atmosphere.

In very useful specification of disease it is of paramount importance that all theoretical expressions should be as much as possible excluded. The influence of ambiguous and ill-defined words in vitiating the statements, perverting the mind and perplexing the inquiries of the medical philosopher, has proved one of the most serious impediments to the progress of his science.

This preliminary step in the prosecution of medical inquiry, obvious and facile as it appears, is perhaps the most difficult. Carefully to observe and accurately to describe, the phenomena with which the physician is conversant, requires not only great patience and industry, but a severe simplicity of aim, an absorbing love of truth, which are amongst the rarest attributes of the philosophic character. The often-quoted remark of Dr. Cullen, is no less true than trite,

that "there are more *false facts* prevailing in the world than false theories," not that we would uncharitably impugn the *moral* veracity of observers, but because we perceive the influence of those *intellectual* 'idols,' which insensibly withdraw the mind from the pure worship of truth. From ignorance or credulity men are often disposed to receive as the basis of their medical reasonings, what in the figurative language of the *Novum Organum*, are only "the mere *rumours* or *whispers* of experience."

It would be superfluous to shew how prominently this vice has been exhibited, not only in the general history of our science, but in the examples of individual practitioners. If we carefully trace to their origin those opinions which regulate our practice, we shall find, that many of them have been derived from the observation of a few cases only, superficially made, and perhaps accommodated to our previous speculations.

But to repose in a few casual facts, or such only as have fallen within the narrow limits of our own experience, is surely as great a mark of mental infirmity as that disposition which in its eagerness to arrive at systematic explanations, and practical axioms, is betrayed into premature generalization.

There is a morbid jealousy of *theory*, not less pernicious, than undue attachment to *system*. *Theory*, which literally signifies only *a mode of perceiving*, is essential to the advancement of every kind of science, and legitimate theories; if their objects be rational, though their principles may be imperfect, are approximations to truth, and adapted to the state of knowledge existing at the time they are offered. Genuine science is only the enumeration of particular facts, but from our limited faculties we are unable to perceive a fact in all its various relations; but when we wish to realize to our own minds, or to communicate to others the objects of our knowledge, we only reduce them to *one point of view*, or form a theory, by seizing a certain number of their relations. As long as any theory furnishes a sufficient explanation of existing phenomena—is not contradicted by any known instances—requires the aid of no gratuitous suppositions, nor suppresses, nor distorts any ascertained facts, it may be admitted in medical, as well as in every other science until a more satisfactory system is proposed. If we review the history of the practice of physic, we shall find that the majority of real improvements has been effected through the medium of theoretical statements. It has been a constant reproach to the medical art, that its doctrines are incessantly fluctuating, that system follows system in rapid succession, and that the most discrepant opinions are alternately the fashion of the day. There is much truth in the allegation, but there is also some exaggeration. To mere hypotheses, the monstrous creations of fancy, we do not allude, for happily the day is long past when such illusions could be tolerated even in medicine, but to genuine theories, of all of which it may be affirmed, that they contain a certain proportion of truth, though it may happen that they embrace too wide a field of explanation. Purified, however, from the errors arising from a too bold and hasty generalization, they become solid accessions to scientific knowledge.

It cannot be doubted that the physiological pathology of Broussais, pervaded as it is by a tyrannizing theory, contains many views of high practical importance, though the error of the system is, that it aims at a *simplicity* beyond nature. The doctrines of Hamilton and Abernethy, on the dependence of certain constitutional diseases, on derangement of the chylopoietic organs are probably much too sweeping, but they may be considered as mighty approximations to the truth; and they have furnished subsequent inquirers with a light, which has conducted to the most valuable practical results.

When the fanaticism which prevails amongst some of the followers of the spinal heresy shall have subsided, it will certainly be found that much important truth has been elicited in the discussion, and that the cause of many anomalous derangements has been explained. In the mean time, the requirements of a strictly inductive method should urge the votaries of this new department of medical investigation to establish some better diagnostic, by which to ascertain diseases of viscera, from affections of their nervous ganglia, than tenderness on pressing the vertebral column.

In the prosecution of medical inquiry, then, facts must ever be investigated and studied, in connexion with general principles. It is absurd to contrast experience and theory as opposite or discordant instruments. "Without theory," says an eminent writer, "experience is a blind and useless guide; while on the other hand, a legitimate theory necessarily pre-supposes a knowledge of connected and well ascertained facts, more comprehensive by far than any mere empiric is likely to possess."*

After all, it may be asked if the medical art be susceptible, like chemistry or mechanics, of being reduced to the accuracy and precision of physical principles founded on induction? When we consider the complicated phenomena of disease, the ambiguous and fugitive nature of many of its symptoms, and the continual operation of that mysterious and subtle element the vital principle; we cannot rationally expect that the rules of our art will ever be universally included within the benefits of a strictly logical method.

In many of our reasonings concerning the nature of morbid actions, we are guided by evidence, which however satisfactory to our own minds, is incommunicable to others; and it is well known that some individuals are endowed with a nice tact in the discrimination of disease, which, if not instinctive, is to a certain degree, independent of reflection and experience.

Though to many parts of medical science the precise *directions* of the Baconian philosophy are not applicable, the *spirit* which animates it may be usefully extended to every part. That patience and modesty in interrogating nature, that sobriety in estimating our own faculties, and the resources of our skill, that magnanimity which will ingenuously acknowledge the limitation of our minds rather than conceal their ignorance in ambiguous phraseology,—these, are amongst the

* Dugald Stewart, vol. ii. p. 469.

most valuable fruits of that profound logic, which it was the distinction of Bacon first fully to disclose, and which Sydenham was one of the earliest to illustrate.

In the expectations which he entertained of the practice of physic being reduced to certain "fixed and complete methods," we therefore think that Sydenham was too sanguine. It would be unphilosophical however to assign any limits to the triumphs of inductive science, in medicine especially, when we review its past achievements; and after all, it may be the part of wisdom to take a lofty aim, though we may only approximate to the object of our ambition.

That our *therapeutic methods* are susceptible of a much greater degree of certainty and precision than they now possess, will be freely admitted. But it may be asked, how is this to be attained? They cannot always be founded on the *nature of disease*, for that is often unknown, much less on any particular arrangement of disease which, as the objects classified, are so imperfectly known must be still more unsatisfactory. They cannot be ascertained by the pathognomic signs of disease, for *they* are often deceptive, much less can they be derived from the action of remedies themselves.

The only safe guide, we apprehend, is an enlightened empiricism, aided by physiology and pathology, to disclose the essential anatomical characters of disease. We are not unwilling to acknowledge our obligations to Nosologists. By classing diseases in groups arbitrarily, or in relation to some few circumstances of natural agreement, they have indicated, to a certain degree, their method of cure. The extent to which the study of morbid phenomena has been facilitated, by arranging them according to the organic tissues to which they are referrible (one of the most beautiful instances of generalization in medicine) requires no illustration.

But it is to the labours of pathologists that we must look with the greatest hope, as to them we must ascribe the marked progress which the practice of physic has made, in the course of the last thirty years. The study of morbid anatomy is altogether of modern origin. The researches of Morgagni, about the middle of the last century, formed a new era in the history of inductive medicine, though it is astonishing, how few immediate successors were to be found, to prosecute the career of investigation, recommended by so splendid an example.

At about the beginning of the present century the taste for pathology has been powerfully revived by our enlightened neighbours of France, whose philosophers have been remarkable for the profoundness of their analytic researches on all subjects. British physicians have been stimulated to the cultivation of this neglected province of inquiry. But after all our competition it must be confessed that, with the exception of Abercrombie, we can boast of few pathologists whose names should be placed in juxta-position with those of Broussais, Laennec, or Andral. The slow advances of this part of science in our own country, are chiefly referrible to causes over which the profession has had no control,—the popular prejudices existing against post mortem examinations, and the different economy of our

public institutions. Within the last few years the antipathies to dissections have sensibly abated, and we are satisfied that medical men lose many opportunities of post mortem examination, for want of sufficient importunity in preferring their requests. One of the principal causes of the unproductiveness of our pathological inquiries is, that attention is chiefly directed to extraordinary cases, and to such as are inexplicable to the observer; but it is obvious that it is from examination of the most ordinary cases that general principles can be evolved, and after all it is of common diseases that we are most ignorant, because we flatter ourselves with the notion of having a deeper acquaintance with them than we actually possess.

Important however as are the results of post mortem examinations to the improvement of our methods of cure, they derive their chief value when they follow in the train of a rigorous clinical examination. Disconnected with the latter, indeed, the information derived from them is in many cases useless, and in most positively deceptive.

Morbid anatomy indeed does not always disclose the first steps, but often the remote effects of diseases, exhibiting changes which arise in their progress, and are not essential, to their production.

It must at the same time be confessed, that the improvement of our curative methods bears no proportion to the enlargement of our acquaintance with those structural disorganizations which the labours of pathology have brought to light. The treatment of Phthisis is still as much a reproach to our scientific principles, as much the boast of a blind empiricism as it was before the natural history of tubercles was understood, and their various characters and stages had become the subjects of a philosophical analysis.

In the language of Sydenham, "there is in disease some specific property which no contemplation, deduced from the examination of the human body, can ever discover, wherefore men should not so place the main business upon the dissection of bodies, as if thereby the medical art might be promoted rather than by the diligent observation of the natural phenomena, and of such things as do good or hurt." There is much truth in these remarks, though an author fell into the opposite error of depreciating the value of necroscopic observations.

We have sufficiently alluded to the first business of the medical philosopher,—the collection, and accurate description of morbid phenomena, observed in detail at the bed side of his patients, and immediately and faithfully recorded, with a view not only to establish an accurate diagnosis between the various modifications of disease, but, to enable him to trace them to their respective causes. In forming theories, or educing general principles; he is still conversant only with facts, and by what name soever, he may dignify any of his conclusions, if legitimate, its distinguishing and characteristic excellence is that it expresses the "universality of a fact."

Fruitless researches relative to causation, one of the great obstructions to the progress of every kind of scientific inquiry was regarded by Sydenham, with peculiar disapprobation.

“Curious inquirers,” says he, “into the *remote causes* of disease, lose their labour while they endeavour in spite of nature, to investigate and to bring them to view, and yet overlook the immediate and conjunct causes that are at hand, that must necessarily and may be discovered without such trifling helps, inasmuch as they disclose themselves to the understanding, and fall under the notice of the senses.” To illustrate more fully the sentiment of our author, it is plain, that it would afford little assistance to the physician in the treatment of pleurisy to know that that disease arose from a morbid condition of the blood itself. It would be sufficient that certain symptoms existed, as pain, and difficult breathing, to indicate the immediate seat of disease, and to suggest the remedies whose efficacy experience had demonstrated.

An exact knowledge of the effects of medical agents also is indispensable to correct method. Our acquaintance with the action of remedies, is still, as in the days of Sydenham, very deficient; and can only be extended by the protracted and minute attention of a number of observers at the bedside. It is the misfortune of the study, that the minds of practitioners are diffused over too wide a series of cases, whence habits of mechanical routine are engendered, and the faculty of observation becomes blunted. Equally prejudicial to the perfection of our therapeutic methods is that propensity of some writers to infer the action of a remedy from a few isolated cases. “If an observer,” says Sydenham, “intends to inform us that a particular disease has yielded once or oftener to such a medicine, of what advantage is it to me that a single drug, of which I knew not before, is added to the long list of eminent medicines with which we have been long pestered.” The imperfections of our art arise not from the paucity of our remedies, but from the difficulty of ascertaining the true curative indications.

If these practical studies were more highly cultivated, a new light would be shed on the operation of a variety of agents, whose virtues are now extravagantly praised or indolently taken for granted; the physician would be saved many mortifying disappointments; and his art, the discredit of impotence and uncertainty.

To give precision to our therapeutic methods, the peculiar circumstances of each case must be accurately noted; not only the very obvious circumstances of age, sex, habits, and occupations of life, and general constitution, but the previous diseases, the hereditary tendencies, and the influence of local circumstances in the production of symptoms.

Happy for the progress of our science would it be, if physicians would exercise a more cautious reserve, in referring many changes which occur in the progress of disease to the use of particular remedies, the relation of sequence and antecedence being often that of time only, not of causation. For want of this kind of circumspection, how often are beneficial effects ascribed to means, at best, only nugatory, which are really owing to circumstances quite unconnected with our art, or to that presiding *vis medicatrix*, which frequently accomplishes a cure, “in spite of our mistakes.”

But, in referring to the Preface of Sydenham's great work, and to the general principles of medical logic, we have been led much further than we anticipated, from the principal design of these remarks, —a statement of the *practical* views of our British Hippocrates.

The importance of the subject, and its relevancy to the introduction of a work which aims at the philosophic cultivation of medicine, will furnish us with a sufficient apology; and we are reconciled to the triteness of our remarks, by reflecting, that in the prosecution of scientific inquiry, the most obvious considerations are those which are most likely to be overlooked.

The work, “on Acute Diseases,” to which our attention is at present directed, may be regarded as a series of essays, without any particular arrangement; several of them are composed in an epistolary form, and evidently without a view of publication. Though, from their titles, they seem to treat of only a few subjects, they contain the remarks of our author on a widely extended list of diseases.

The notion entertained by Hippocrates, that disease is only a vigorous effort of nature to throw off a morbid cause, and that the office of the physician is to moderate the operation when too violent, and to assist it when languid, was also the fundamental idea of Sydenham. In his explanation of that particular process which constitutes disease, he adopted the views which at the time were most prevalent, that all morbid states were connected with certain conditions of the humours of the body; that these, either from their accumulation, or their deteriorated quality, became subject to fermentation or putrefaction; and that the expulsion of these peccant fluids, which constituted disease, was the office of Nature herself. Such is a brief outline of the humoral pathology, a doctrine, at one time, the universal creed of physicians, and which has derived much of its popularity, in modern times, from the powerful sanction of our illustrious author. That a mind like that of Sydenham, constitutionally averse to hypothetical statements, should have been satisfied with a theory so purely gratuitous as the basis of his pathological views, is a fact which may justify our astonishment, and the admission of which seems inconsistent with that high estimate of his logical excellencies on which we have ventured. It is not, however, more remarkable, than the instance of his great predecessor, who, though the Father of inductive logic, scarcely took a step himself in physical research, without violating the principles of his own science. In extenuation of the errors of Sydenham, it should also be recollected, that when he wrote, the study of morbid anatomy, (by which the actual “footsteps of disease” can be traced,) had scarcely commenced, and that amongst the pathological systems which then prevailed, the humoral hypothesis was not the *most* extravagant and visionary. Extensively as it pervades his speculations, it seldom vitiates his descriptions of disease, or his maxims of treatment. Where the subjects of his inquiry appeared accessible to the light of observation and experience, he rarely forsakes their safe guidance; and where his speculations pass from actual phenomena

to their occult causes, the line of demarcation, between what is known and what is conjectural, is always visible.

It has been well observed, that “the hypotheses of Sydenham sat so loosely about him, that either they did not influence his practice at all, or he could easily abandon them whenever they would not bend to his experience.”*

When the words ‘despumation,’ ‘ebullition,’ ‘fermentation,’ occur, repugnant as they are to our more extensive physiological knowledge, we must recollect that they are not expressive of any facts, but are used, like the unknown quantities of the mathematician, as formulæ, to assist in the process of discovery. They are not essential to his system, but its accidental blemishes; they do not constitute its foundation, but rather the grotesque appendages of the superstructure, unsightly to the eye, but not prejudicial to the stability of the fabric.

The views of Sydenham on the nature of epidemics, have been more frequently referred to than any other part of his speculations. The influence not only of climate, and season, but of the different atmospheric constitutions of different years, was more clearly stated by our author, than by any previous writer, and his opinions have been amply verified by subsequent experience. Indeed it is doubtful if this curious subject has been advanced one material step beyond the point where our great physician left it.

Of the practical importance of the principle, we require no other proof than the fact, that the same method of curing an epidemic at one period, may prove destructive in the treatment of a disease, apparently the same, at another. The notion that this atmospheric constitution, should be referred neither to “heat, dryness, or moisture,” but rather to certain occult and inexplicable alterations in the bowels of the earth, contains the germ of a more recent hypothesis, which attributes epidemic influence to those electrical changes which transpire in the interior of the earth’s structure.

The epidemics which prevailed in England between the years 1661 and 75, include principally *continued* and *intermittent fever*, *small-pox*, *cholera*, *dysentery*, *bilious cholic*, and *measles*. Contemporaneously with these epidemics, other diseases presented themselves, for the most part of an inflammatory nature, as pleurisy, or cynanche, which he called *intercurrents*, and whose character was modified by virtue of the predominant atmospheric influence; thus furnishing by its conformity to the prevailing malady, a beautiful proof and illustration of the existence of an epidemic cause. Nothing can be more inartificial than his manner of describing these several maladies; and there is frequently a graphic power in his delineations, which at once reveals the hand of the master, and points to nature as the source of his instructions.

His curative directions are generally simple and decisive. His plan of treating ordinary *continued fever* was, first, to bleed, (except

* Gregory’s Duties, p. 127.

in children and old people,) afterwards, to give emetics of antimony and squills, which were to be followed, in the evening of the same day, by an anodyne of the syrup of poppies (*diacodium*). *Enemas* were recommended in most cases throughout the disease, and a purgative of infusion of senna, manna, and tamarinds at its close. Sydenham was probably prejudiced by his humoral views, against that free use of purgatives, which modern practice has introduced in the treatment of fever; though we think, that if *he* was too cautious in administering them, some of our cotemporaries are too bold and indiscriminate. If we are not mistaken, we have repeatedly seen cases of fever combined with gastro-enteritic inflammation rendered intractable by the action and persevering use of this class of remedies. Many patients in fever did well, even in Sydenham's days, without prescribing any medicine at all, by keeping them in bed, inviting them to drink copiously of gruel, and sometimes of *warm small-beer*, and administering daily enemas of milk and sugar.

The history of *intermittent fevers* is more than usually deformed by hypothetical statements relative to their proximate cause. We will not detain our readers by any attempt to transcribe our author's views on the nature of ague, but will advert merely to his mode of treatment. He condemns the use of the lancet, except in some peculiar circumstances; and, in the early part of his professional career, he committed the cure chiefly to Nature, and to a few elaborate combinations of mild stimulants.

The bark was introduced as a cure for quartans, (a disease previously regarded as one of the principal *opprobria medicorum*,) in 1650; but, in consequence of some accidents which happened from its injudicious use, and because its supposed *modus operandi* did not coincide with the prevailing hypotheses relative to the nature of the disease, it was very soon discarded.

The character of those visceral derangements which often coexist with intermittent fever, and the presence of which renders any specific inert, if not injurious, was, at the time, very imperfectly understood. It was, however, the merit of our great physician to point out some of the causes which deprive the bark of its efficacy in this disease, and to insist on the necessity of completely saturating the system with it before a complete cure could be effected.

Fortunately for the present race of British physicians, *the plague* is a disease with which they are acquainted only by tradition. Sydenham regarded it as an instance of Providential favour, that, in his time, that fearful scourge visited the island with violence seldom oftener than once in *thirty or forty years*. The memorable plague of 1665, proved more destructive than any previous visitation of the disease. Until the month of June of that year our author remained in the Metropolis, not an inactive spectator of the calamity. As it approached his own family, he with many others adopted the resolution of retiring into the country to avoid the impending danger; and in a few months afterwards, the disease arrived at its extreme point of fatality; as many as 10,000, according to Pepys, having fallen its victims in one week. After his return to London, when he

had an opportunity of witnessing the close of that dreadful epidemic, he wrote his treatise on its mode of treatment. His principal means was copious blood-letting.

The views of Sydenham on the degree of infection, connected with the plague have been disputed; but it is quite clear that he had not anticipated the refinement of some modern speculators, who have satisfied themselves that it is not communicable. Though a most firm and philosophic believer in the supreme importance of epidemic influences in its production and propagation, he maintains that it may be conveyed from an infected person to one uninfected, and that the only way to check its progress is to prohibit all intercourse between the sick and the healthy.

His account of *small-pox* is a very felicitous specimen of medical writing: its delineation of symptoms is most minute and accurate, and his curative instructions most rational and decisive. To Sydenham belongs the merit of having exploded (notwithstanding a violent opposition) the hot regimen from the treatment of this and of other varieties of eruptive fever. He shews that the principal danger of the disease arises from the secondary fever, and that the best means of averting it is to expose the patient to a congenial moderate temperature, and to allow him the plentiful use of mild diluents.

On the decline of small-pox, he exhibits to his patient some mild cordial, as warm Canary, and an opiate. He strongly urges the liberal use of opiates, which, in the confluent form, may be conjoined with dilute sulphuric acid, after the eruption has ceased. The beneficial effects of this practice we have often seen, where the pustules slowly mature and assume a black appearance, in abating distressing restlessness and anxiety, and supporting the constitution, well-nigh exhausted under the shock of disease.

The *petechial fevers* in 1670-71-72, resemble the slow putrid fevers of modern authors, an epidemic which is nearly obsolete. The efficacy of the cooling treatment is here again strikingly exemplified, and the faithful picture of the evils arising from the opposite plan ought to have preserved physicians from the extravagancies of Brunonianism, had not ingenious theory always proved more seductive than a simple statement of facts and observations.

In *cholera morbus*, Sydenham, after prescribing diluents and enemas, relies chiefly on laudanum, which may be given from the first, if the symptoms are urgent.

In describing *dysentery*, he never loses sight of its connexion with a peculiar inflammation of the bowels. His remedies are few, but decisive; *venesection*, succeeded by an opiate and purgative alternately, and the use of diluted milk and mutton broth as the ordinary drink. To these he adds the frequent use of the warm-bath.

The *measles* are sketched with the hand of a master, and the peculiar source of danger in this complaint, was first clearly pointed out by our author. His treatment coincides with his indications, it was rather of a negative than of an active kind, consisting of abstinence from nutritious diet, the use of light clothing, and of a pure, temperate atmosphere, and the frequent exhibition of barley

water, and other warm mucilaginous drinks. If, after the eruption had disappeared, symptoms of peripneumacy succeeded, venesection was most urgently indicated. "I have," says he, "ordered with great success, the tenderest infants to be blooded in the arm in such quantity, as the age and strength indicated, and when their disease has been urgent I have not feared to repeat the operation." The use of the lancet in some of the diseases of infants has been too generally neglected. We are persuaded that in a great proportion of their acute attacks, it is far more efficacious, and really less expensive of vital energy, than the more tedious, uncertain, and often dangerous method of bleeding by leeches.

In all acute diseases, where the strength of the patient will allow, Sydenham strongly enforces the practice of allowing him to sit up frequently in the day. He had found it to relieve the patient by preventing the accumulation of heat, and when the head was much affected, to lessen the determination of blood to that organ.

The mode of treatment recommended in *pleuritis* and *pneumonia* is as decisive and energetic as that which would be adopted by modern practitioners. The plan of attempting to promote a cure by *expectoration* he condemns as at once irrational and dangerous. Bold and repeated venesection was his great remedy: after this, mucilaginous drinks, and the abstraction of all stimuli, perfected the cure. In *acute rheumatism* he is more liberal in the use of the lancet (which with the aid of warm fluids containing potassæ nitras, he relies for a cure) than the practitioners of the present day. Of the *early* intervention of opiates he strongly disapproves, as a practice requiring the frequent repetition of bleeding, and therefore tending to protract the disease. Subsequently, he modified his views relative to the treatment of rheumatism, when he found that the disease became obstinate by repeated venesection.

The *scarlet fever* is wisely considered dangerous, chiefly through the extra officiousness of the physician. Cool air and diluents are his chief resources.

Erysipelas is described with his usual vigour and felicity. The treatment enjoined is strictly antiphlogistic, consisting of bleeding from the arm, purgatives (senna with rhubarb), opiates at bed-time, and emollient fomentations.

The *cynanche tonsillaris* of Sydenham's day, appears to have been a more acute disease than the complaint we know under that denomination, sometimes proving fatal in a few hours. Bleeding from the arm, blisters to the back of the neck, and simple gargles are the means of cure which he recommends.

Hæmoptisis and *epistaxis* he also considers *acute* diseases, and requiring antiphlogistic measures.

In *hooping cough*, he bled according to the urgency of the symptoms, applied a large blister to the back of the neck, and administered his favorite purgative of senna and rhubarb daily. He is eloquent in his praises of whey diet, which he had found singularly useful in a great variety of acute and chronic disease, especially in rheumatic

fever. The remedial efficacy of a very spare diet we believe is very imperfectly understood.

His notions respecting *syphilis* are crude and unsatisfactory ; copious salivation by mercury, which was to be used until the patient had distilled “about two quarts of *saliva* daily,” was his only resource.

Under the term *hysteria*, Sydenham has very admirably described that class of disease popularly termed *nervous*, which are most frequent, though not peculiar, to women, disturbing the functions of different organs, and stimulating every variety of morbid action. Sometimes it affects the head, occasioning violent convulsive symptoms resembling apoplexy, or intense pain referrible to a particular spot ; sometimes it occasions alarming palpitations of the heart, or violent cough without expectoration ; sometimes it attacks the stomach and bowels, producing violent pain and vomiting, attended by great mental depression, and possibly terminating in a transient fit of jaundice—sometimes the kidneys, inducing symptoms of calculus in the bladder giving rise to strangury. His directions for combating this proteus disease, are precise and practical, though somewhat vitiated by his absurd pathology. The urgent symptoms are to be obviated by anodynes, afterwards purgatives are to be exhibited several successive mornings, and the cure is to be confirmed by chalybeates and bark. The warm-bath, and the administration of galbanum and castor, are useful in relieving occasional symptoms.

We have already alluded to Sydenham’s caution in the employment of purgatives ; an instance, amongst only a small number, in which he allowed his powers of acute observation to be distorted by his unsound theories. He was deterred from that liberal use of this class of medicines, the utility of which is now fully established, by the apprehension that, in determining to the abdominal viscera so large a quantity of peccant humours, the growth of preternatural tumours might be induced. In recommending their free administration in the abdominal swellings of children, conjoined with chalybeates, we perceive his superiority to mere system. The praises of milk diet often recur, and the utility of horse exercise is affirmed in terms which appear to us extravagant. His estimate of equitation as a remedy in consumption, is well known. He regards it, indeed, quite as specific “as mercury, in syphilis, or bark, in ague.”

Before the time of Sydenham, there existed no very considerable, nor intelligible description of *gout*. It was the lot of our great physician to be himself a victim to the horrid torments of that disease from the age of twenty-four, and the recollection of his exquisite sufferings infused a peculiar power and circumstantiality into his picture of the malady. Our limits will allow us only to refer to this remarkable specimen of semeiography, which we cannot but regard as a chef d’œuvre of medical description. It is, however, so much intermingled with *humoralism*, that most readers are repelled from its perusal. In his treatment of *gout*, Sydenham is sceptical of almost all remedies ; purgatives are condemned, and even bleeding, his favourite resource, here fails him. The only medicines he uses

are a few simple stomachics elaborately combined, a formula of which he gives "for the benefit of beginners," consisting of *thirty-one* ingredients. His principal reliance is on the correction of that particular habit and diathesis on which the liability to this disease depends. The diet should be most carefully regulated; a small quantity of meat may be taken once a day, but milk should form the principal aliment. "He will be deceived," says Sydenham, "who thinks he can cure this, or any other chronic disease *by medicine alone*." The ordinary drink should be "neither as strong as wine, nor as weak as water." *Small-beer*, or diluted Spanish wine, are the best kinds of beverage. Horse exercise, early hours, and the adoption of those habits of life which are favourable to mental tranquillity, are also important auxiliaries in the subduction of the gouty diathesis. Amongst the local remedies, he recommends the application of *moxa*, to mitigate pain in the joints.

His treatise on dropsy, though rather desultory, is rich in acute observations and valuable practical directions. His principal curative resources are purgatives, especially scammony, jalap, syrup of buckthorn, and, in cases which have resisted other means, elaterium.

In *diabetes*, Sydenham first suggested the restriction of the patient to animal food. In *chorea* he recommends purgatives, and small bleedings, and in obstinate *ileus*, he trusts to the tobacco enema.

We have thus presented our readers with a rapid sketch of the practical views of our English physician, as they appear in his great work,—a work which, of its kind, was perfectly original, and the appearance of which marked the most signal era in the history of British medicine.

With the exception of his illustrious prototype of Coos, there was no master to whose instructions he was, in any considerable degree, indebted; and the precepts of Hippocrates guided him, not from their authority, but from their correspondence with those genuine rules of philosophizing, which had been almost overlooked in the midst of conflicting systems and rival hypotheses.

The works of Sydenham, original in their very aspect, destitute even of ordinary method and arrangement, pervaded by a spirit of bold independence and of contempt for mere prescription, were coeval with a new era,—a most signal revolution in the history of medical science, the commencement of a system of *rational empiricism*. In the methods of cure, he had the merit of introducing plans more simple, natural, and decisive; and in his descriptions of the phenomena of disease, there was a degree of force and accuracy, and honesty, unlike those distorted pictures to which the learned had been hitherto accustomed.

The medical inquirer, recognizing the features of Nature reflected as from a faithful mirror, was encouraged to examine for himself with more diligence the original; and, recalled from splendid fictions, and inane speculation, was induced to apply himself to that, which, while it is the first and most important, must be the constant and the final aim of the medical philosopher—*the examination of facts*.

The principal errors of Sydenham are referrible to his low appre-

ciation of physiological and pathological knowledge,* a slight acquaintance with which studies would have preserved him from those theoretic absurdities into which he is constantly betrayed in spite of his own logical precepts—when he attempts to *explain* the phenomena of morbid action. With all its faults, however, his work is the greatest contribution ever made by an individual to practical medicine, and must always be regarded, amidst all the fluctuations of opinion and precept, as a monument of unrivalled genius.

To have supposed him capable of emancipating his mind at once from the trammels of error and of system, would be to have conceived him endowed with superhuman energy—to have been, a solitary exception of *greatness without infirmity*, amidst all those transcendent spirits, by whom, at different periods, signal improvements have been effected in the moral, social, and intellectual condition of mankind.

The views of our great reformer were very variously received by his cotemporaries. By *all* they were regarded as an *innovation*; and by the members of his own community in particular, his heresy was deemed of so mischievous a tendency, as to justify their efforts to deprive him of academic privileges and distinctions. At a very early period, his opinions were extensively known and warmly eulogized amongst the medical fraternity of France and Germany; and to the present day there is no British physician, where authority is more venerated, and more frequently the subject of reference, than that of our illustrious countryman. Even in England he had, at an early period, his distinguished admirers, correspondents, and eulogists; amongst whom we find the names Doctors Cole, and Brady, men occupying the highest station in public favour and confidence.

Posterity has not been reluctant in acknowledging the peculiar merits of Sydenham; though it must be confessed, that his praises are often echoed by those, who have never read his works.

It is with justice, that he is regarded as the founder of the British school of clinical medicine, and to his example and instructions we are disposed to attribute in no slight degree, that air of *common sense*, that superior *practical tact* and *energy*, by which the medical practitioners of our country have been characterized. His instructions have imperceptibly been incorporated with every rational system of physic, and the admirable *spirit* of his philosophy has gradually infused itself into the investigations of many of his successors. It

* It is related of Sir Hans Sloane, the successor of Newton, in the chair of the Royal Society, that on his first arrival in London, he waited upon Sydenham with a letter of introduction from a friend, describing his acquirements in very glowing terms:—"he was a ripe scholar, a good botanist, a skilful anatomist." After Sydenham had perused this eulogy, and had eyed the young man with attention, he said, "All this is mighty fine, but it wont do. Anatomy—botany—nonsense! Sir, I know an old woman in Covent Garden, who understands botany better; and as for anatomy, my butcher can dissect a joint full as well. No, young man, all this is stuff; you must go to the bed-side, it is there you can alone learn disease."—*Wadd's Memoirs*, p. 231.

cannot, however, be denied, that notwithstanding our boasted advances in pathological, physiological, and clinical knowledge, the triumphs of genuine inductive logic are still very incomplete in reference to the medical sciences, the present aspect of which exhibits in many places a wide aberration from that rigorous fidelity to Nature and to Nature's laws, which was the characteristic excellency of the semeiological writings of Sydenham.

The vicious propensity to systematize is not yet extinct; there is still a morbid passion for bold speculation, and hasty generalization, and an impatience of the slow, cautious, and self-denying process of observing phenomena. Medical opinions are still the sport of constant and violent fluctuations; and the doctrines of our schools, are yet too much the victims of caprice, vanity, and personal ambition.

We have already made so large a demand on the patience of our readers, that we must defer to a future occasion the consideration of that part of our inquiry which is, after all, perhaps, the most interesting and important—the present condition of the medical sciences as estimated by the principles of a strictly logical method.

PART III.

NOTICES OF RECENT PUBLICATIONS.

Practical observations on Leucorrhœa, Fluor Albus, or “Weakness,” with Cases illustrative of a new Mode of Treatment. By GEORGE JEWEL, Member of the Royal College of Surgeons, &c. London: J. Wilson. 1830.

It is only a few years since an eminent practical writer remarked, in reference to the ignorance then existing, concerning the diseases of the female organs of generation, that all the discharges from the vagina not of a red color were classed under the title of Fluor Albus, and treated as that disease. Happily it is otherwise now; and to Dr. M. Clarke, the writer alluded to, the profession are mainly indebted for the gratifying progress that has been made in this department of pathology. The great rule which he has laid down is one, that must ever be held indispensable, namely, that we ought to examine manually, or by inspection, as circumstances may demand, in every affection of the female organs where a doubt exists as to its precise nature. Formerly it was the custom to prescribe from a history of the symptoms given by the patient, except perhaps when there was a suspicion of the complaint being malignant. The consequences were, as might naturally be expected, gross empiricism on the part of the practitioner; and in regard to the patient, as gross mismanagement of her disease, leading to an aggravation of all the symptoms.

It is one important particular in the long catalogue of Dr. M. Clarke's merits, that he was the first who clearly demonstrated the

impossibility of obtaining a correct acquaintance with these diseases, without this mode of examination.

On the number and the nature of the diseases of the female organs of generation however, it is not our purpose at present to dilate. We choose rather the humbler, and we hope, profitable duty, of endeavouring to furnish such of our readers, as have not perused the work of Mr. Jewel, with an abstract of some of his valuable observations on Leucorrhœal discharges.

We may be permitted, by the way, to mention our surprise at the pretensions made by several late writers, to the palm of original observation in diseases affecting the uterine organs. The gentlemen we allude to, would have us believe that various diseases hitherto unnoticed, or else confounded with those that are well known, have been at length discriminated by them, the nature of each defined, and its treatment determined. Thus Dr. Gooch has favoured us with an account of what he calls "the irritable uterus," a disease "not described in books." Had the eminent writer turned to the ninety-second page of the seventh edition of Burns's *Midwifery*, he would have found a brief but clear description of "the irritable uterus" under the name of "uterine uneasiness," which Burns ascribes to an affection of the pelvic nerves, and not to "any inflammation or displacement of the womb itself." More recently, Mr. Taite and Dr. Addison have brought forward their separate contributions to the store of original observation; the former in a work on *Hysteria*, and the latter in a very small volume on "the disorders of females connected with uterine irritation." The object of both the writers is to shew that a great variety of anomalous feelings, tenderness of portions of the spine, and other local pains often hitherto treated as inflammatory, and otherwise misunderstood, are solely the result of derangement of the uterine functions. If these gentlemen or our readers will turn to the last edition of Burns's *Midwifery*, they will find the same opinions clearly and pretty fully stated, with a little less confidence, it may be, and some necessary qualification, under the heads of chronic hysteritis, amenorrhœa and hysteria. We do not pretend to deny that the works of Mr. Taite and Dr. Addison are valuable and instructive (so far as the sentiments they contain are correct) as amplifications of principles and practice already known.

Of the volume of Mr. Jewel, we are disposed to speak with respect; rather, however, on account of the clear, generally sound, and practical views it contains, than of much in it which may not be found recorded as well elsewhere. To recommend and illustrate the employment of nitrate of silver, as a local remedy in Leucorrhœa, is the chief aim and merit of the work. This being the case, it is passing strange that the name of Higginbottom, to whom Mr. Jewel is obviously indebted for his knowledge of the peculiar and valuable properties of the nitrate, is not, we believe, even mentioned.

When called to treat Leucorrhœa, our first object must be, of course, to find out its cause, and, if possible, its precise source. Regarding the mere discharge as of secondary moment, the prac-

itioner must satisfy himself in reference to the particular disease he has to combat. It will not do for him to prescribe nitrate of silver, or any other remedy, with a view to remove the Leucorrhœa, which, in all cases, is a mere symptom of some extraneous growth, structural disease, displacement of parts, local inflammation, or, most commonly, of a morbid condition of the mucous membrane, which has received the name of irritation. In reference to the latter description of cause, Mr. Jewel remarks :

“It must be familiar to the practitioner, that every discharge, not sanguineous, which issues from the vagina, is, among females, usually included in the terms Leucorrhœa, or Whites; there is also a popular opinion, that vaginal discharges have their origin in constitutional or local debility; hence a complaint of this kind is denominated a weakness. That such a term should be employed to perpetuate an error in practice, is to be lamented; for, I believe, if we investigate the pathology of leucorrhœal discharges, we shall find them, most commonly, to have their origin in local excitement.

Dr. Clarke, in his very practical work on female diseases, when speaking of the transparent mucous discharges not accompanied by any alteration of structure, classes such affections under two heads, namely: Those which originate from, or are accompanied by, increased action in the vessels of the part; and others, which arise from debility; and Mr. Burns has said, that Leucorrhœa may be caused by a state of increased vascular action, and by debility, either preceded by increased action, or directly produced by weakening causes; whilst many authors have asserted, that the disease is always a weakness, general or local, according to the true meaning of the term. A minute pathological inquiry must, I think, lead to the conclusion, that local irritation, determination, or inflammation, is the immediate exciting cause.” P. 3.

From the manner in which the opinion of Mr. Burns is here stated, the reader naturally infers, that he considers debility as one of the direct causes of Leucorrhœa. His own words, however, have a very different import. “Debility,” he remarks, “has been enumerated as a cause of Leucorrhœa, but we find many degrees of weakness without this concomitant; and it is very difficult to conceive how it should act in any other way than as a predisposing cause. In this way, particularly in scrofulous constitutions, it renders very slight causes efficient.”

Another point of controversy is, whether the irritation of the mucous membrane, producing Leucorrhœa, ought to be regarded as a local disease, or as a symptom of constitutional derangement.

“While some writers have insisted on Leucorrhœa being always a local disease, having its seat for the most part, in the uterus or vagina; others have maintained it to be symptomatic, having its origin in general functional disturbance of the system. To this not by any means unimportant part of the subject, I have directed my attention, in order to discover which opinion was entitled to credit; and I have been led to the belief, that the vaginal discharge is commonly the result of some direct local stimulus. That cases do occur which seem to depend upon a disordered state of the digestive organs, or disturbance of the general health, is obvious; but this altered or relaxed state of fibre, is one which particularly predisposes to local inflammation, or congestion.” P. 4.

Disputes on this point are little else than trifling. That Leucorrhœa is “the result of some direct local stimulus,” can only be said when an irritating cause has been applied to the parts; and this, doubtless, often happens. But to affirm that it is not also a symptom of general derangement, in the case of multitudes of sedentary females, would be to gainsay the experience of every observant

practitioner. In truth we are disposed to think, that in by far the majority of instances, where the discharge is not accompanied by much tenderness over the sacrum, and a sense of dragging, (symptoms that generally indicate subacute inflammation of the cervix uteri, with partial prolapse of that organ,) that the Leucorrhœa is strictly symptomatic of general disorder of the system, precisely as bronchitis and diarrhœa have occasionally a similar origin; and that it is readily removed by general treatment without local remedies.

What is, commonly, the seat of Leucorrhœa? The lining membrane of the vagina, we have little doubt, in the milder cases, and the cervix uteri, together with the vagina, and sometimes the uterine cavity in cases that are severe and long protracted. In rare instances the fallopian tubes are the seat of the discharge.

“A vaginal discharge, the result of a morbid action in the fallopian tubes, or ovaria themselves, sometimes occurs; in which case it might be exceedingly difficult to decide, with any degree of pathological accuracy, upon the true nature of the disease. The more prominent symptoms would be, deep-seated abdominal pains, with an enlargement, or great tenderness on pressure either on one side or the other. A case is recorded as happening in the person of one of the sisters of charity at Tours, where the morbid vaginal secretion issued from the right ovary. This female had been subject to severe Leucorrhœal discharges for many years, which, in fact, ultimately destroyed her. Upon examination of the body after death, the ovarium was found exceedingly enlarged, being almost full of pus. It was grasped by the fimbriated extremity of the fallopian tube, and through this canal the matter passed from the ovarium into the uterine cavity, and from thence externally through the vagina.

“Here it may be necessary to state, that Mr. Blatin examined the bodies of twenty-four females who died from excessive Leucorrhœal discharge, with a view of ascertaining the seat of the disease. In nine of these cases the morbid secretion was found to arise from the uterus; in thirteen, from the neck of the uterus and vagina; and in two, from the fallopian tubes.

“A mucous vaginal discharge is not unfrequently discovered to arise from excoriations about the nymphæ, a species of the disease which is purely local. In such cases, I conceive the nitrate of silver to be the most efficient remedy that can be employed.” P. 39.

Our author remarks, that

“too much reliance ought not to be placed on the consistence and color of the vaginal discharge, as indicative of the morbid action existing in any particular structure.”

This is true. We have known chronic inflammation of the cervix uteri proceed to ulceration and extensive induration with very little discharge of any description; and the sudden transition we sometimes witness, from the transparent to the muco-purulent discharge in the simple forms of Leucorrhœa, proves that the secretion may vary from causes so slight as to escape detection, and which, consequently, in a practical sense, are unimportant. Nevertheless, the characters that distinguish different vaginal discharges connected with particular diseases, as pointed out and so admirably illustrated by Dr. M. Clarke, are by no means to be disregarded. His observations will be found *generally* correct, and more ought not to be affirmed of the best practical rules.

TREATMENT.—Under this head the writer excels. But, as is his due, we shall allow him to be his own oracle in announcing his “new

mode of treatment;" only premising, that the general principles of cure which he advises in the various species of Leucorrhœal discharges, independently of the nitrate of silver, and as necessary to precede or accompany its employment, are judicious but without novelty.

"In the application of the nitrate of silver to the surface of parts, in a morbid or unhealthy state, a most obvious change is almost immediately produced, which (although we are incapable of explaining it philosophically) eventually terminates in healthy action. One circumstance, more particularly, led me to adopt the use of the nitrate of silver in the cure of these diseases, namely, the extensive and healthy changes which I have known to result from the application of this agent to the different mucous tissues, when their secreting surfaces had taken on a disordered or unhealthy action, as in those of the fauces and larynx. After extensive trials and observation, I can confidently say, that its effects are as conspicuous in cases of vaginal discharge, not dependent on disorganized structure, as in the various local diseases in which it has hitherto been employed with so much success. It has been said, that checking the vaginal discharge is prejudicial. This opinion is at variance with my own experience; but I would employ the nitrate of silver, not merely with a view of arresting the discharge, but to produce a perfectly new action or new excitement, in the part from which the secretion has its origin.

The mode I have adopted in the application of this agent, has been either to conceal it in a silver tube, as it is employed in cases of stricture, (except that the tube should be adapted to the size of the argent. nitrat.) or in the form of solution, in the proportion generally of three grains to the ounce of distilled water, the strength being gradually increased. A piece of soft lint may be moistened with the solution, and introduced, for a short period, into the vagina several times in the day; or a bit of sponge, firmly and neatly tied to the end of a slip of whalebone, may be passed into the vagina up to the os and cervix uteri, well saturated with the solution. This can easily be effected by the patient herself. It is necessary that the application should be frequently repeated, or no permanent benefit can be expected. Should it become requisite to employ a strong solution, and to apply it to a certain part, or ulcerated surface, it can be accomplished with a degree of nicety, by means of a camel's hair brush, introduced through the speculum, or dilator. This, however, can only be done in the absence of excoriations, or tenderness; as the introduction even of a common syringe, sometimes produces a considerable degree of pain and irritation; independently of which, some females will not submit to the introduction of any instrument. In married women there is not the least difficulty in using the dilator, neither does its introduction, under common circumstances, occasion any degree of pain. By means of this instrument, the condition of the cervix uteri and vagina can be readily ascertained.

"A few remarks upon the use and choice of the syringe, when injections are employed, will not, I trust, be considered a digression. It must be obvious, that if the act of throwing in the injection be attended by any muscular effort, the injected fluid cannot reach its destined point, namely, the neck of the womb, and upper part of the vagina. In using the common straight syringe, a degree of bodily exertion cannot be avoided, whatever may be the position of the patient; and consequently the operation must prove very inefficient, if not altogether useless. The pipe of the syringe ought to be curved, so that when introduced, its point may come in immediate opposition to the os uteri, and the patient should place herself in the recumbent posture, in which position she should remain at least several minutes after the syringe has been withdrawn. The principal advantage in injecting the fluid is, that if any superficial ulcerations exist, they will be readily healed.

"It is very satisfactory to observe, that the nitrate of silver, when judiciously used in either of the forms above recommended, gives no pain nor irritation, at least no more than is occasionally produced by the injection of any common astringent."

For several well drawn up cases, illustrating the author's mode of treatment, we refer our readers to the work itself; as also for observations on Gonorrhœa in the female, and its cure by the nitrate

of silver. In order that we may do full justice to a volume so practical, we subjoin a table of its contents.—

CHAP. I.—*Pathology of Leucorrhœa*. II.—*Pathology of Leucorrhœa continued. Irritation. Congestion. Inflammation. Disease in the Ovaria, or Fallopian Tubes. Excoriations about the Nymphæ. Vascular tumour near the Meatus*. III.—*Leucorrhœa in children:—in pregnant women:—at the turn of life*. IV.—*Colour and consistence of vaginal discharges. Pruritus*. V.—*Predisposing and exciting causes of Leucorrhœa. Influence of the seasons:—of a contaminated atmosphere. Epidemic. Hereditary. Metastasis. Ascarides. Leucorrhœa of habit*. VI.—*Treatment of Leucorrhœa. Bleeding. Opium. Rest. Purgatives. Local ablution. Cold general bathing. Cantharides. Mercury. Astringents. Counter irritants. Iodine. Nitrate of silver. Cases. GONORRHŒA. Cases of. Remarks*.

ART. II.—*A Demonstration of the Nerves of the Human Body. Consisting of Four Parts*. By JOSEPH SWAN. Part I. Price two guineas. London: Longman and Co.

WE have just received from the author the first number of this splendid work; Mr. Swan is already well known to the medical public, as an able surgeon, and scientific writer. With a view of obtaining greater facilities of prosecuting his favourite studies, and more particularly in reference to the present undertaking, we understand that our author has, in the course of the last few years, removed his residence from Lincoln to the Metropolis. The first part of the “Demonstration” contains four plates, accompanied by four explanatory engravings of the cervical and thoracic, portions of the sympathetic, and the nerves of the thoracic viscera.

Until a late period, British anatomy could boast of few graphic illustrations at all comparable to those works, by which the science of the anatomist is adorned amongst our Continental neighbours. Mr. Swan’s labours appear likely not only to remove the reproach, but to associate the anatomical knowledge of his country with the most remarkable specimens of art. As an example of minute dissection, the present work reflects credit, not only on the author, but on his country; and we sincerely hope that Mr. Swan will receive, from his professional brethren, that substantial encouragement, which can alone indemnify him for the great sacrifices which his costly, laborious, and public-spirited undertaking must entail.

ART. III.—1. *A Treatise on Pulmonary Consumption, its Prevention and Remedy*. Pp. 156. Price six shillings.

2. *Remarks on the Disease called Hydrophobia, prophylactic and curative*. By JOHN MURRAY, F.S.A., &c. &c. &c. Pp. 86. Price four shillings. Longman.

MR. MURRAY is well known, as an excellent chemist, and an instructive lecturer. Though not belonging to the medical profession

he has selected two subjects for investigation, perhaps, more opprobrious to the professors of the healing art, than any within the entire compass of medicine. He has certainly succeeded in giving a popular form to a great deal of interesting information. But we must, in critical justice remark, that Mr. Murray is altogether deficient in the necessary qualifications for such inquiries as those he has undertaken. Carefully to ascertain the action of remedies, requires the habits of a practical medical man, and to ascertain necessary indications for their administration, demands a much more copious induction of facts than we find in Mr. Murray's treatises. As our author is not a *regular* combatant in this untrophied warfare against two of the most formidable enemies of the human species—but a *volunteer*, his efforts, dictated as they certainly are by the purest philanthropy, should escape at least without the severity of criticism.

PART IV.

PROVINCIAL MEDICAL INTELLIGENCE.

Mineral Springs at Slaithwaite, near Huddersfield.—Mr. West, of Leeds, has furnished us with the analysis of two alkaline waters, which supply the commodious baths recently erected at Slaithwaite.

The water for the hot and cold baths rises to the surface of the ground in the bath-room, in a uniform stream, sufficient to renew continually the cold bath, preserving it in a state of beautiful transparency; while the force of the overflowing portion is sufficient to pump up a supply for other parts of the establishment. This spring yields, in the imperial gallon,

Chloride of Calcium (Muriate of Lime) - -	.7	of a grain.
Chloride of Magnesium (Muriate of Magnesia) - -	.4	of a grain.
Chloride of Sodium (common Salt) - - - -	2.5	grains.
Carbonate of Soda - - - - -	20.4	grains.

Total, 24 . grains.

The salts are stated as usual, according to their weight in the dry state. The carbonate of soda would be equal to 54 grains crystalized.

The Gases yielded by this water on boiling, consist of,

In the imperial gallon.

Sulphuretted Hydrogen	.75	cubic inches, or about 6 per ct.
Carbonic Acid - - -	1.25	
Carburetted Hydrogen	4.75	
Azote - - - - -	6.25	

13. cubic inches.

From the nature of the combination between sulphur and soda, and from some of the experimental results, Mr. West thinks that more sulphur exists in the water than can be separated from it in the form of gas.

The water which supplies the swimming bath, contains the same ingredients, but in rather different proportions, viz.:

In the imperial gallon.

Chloride of Calcium -	.75	grains.
Chloride of Magnesium	.4	
Chloride of Sodium - -	2.65	[crystalized.
Carbonate of Soda - -	17.8	grains, equivalent to 47 grains

The Gases are also similar, but in smaller quantity.

Mr. West has avoided much medical comment, but he remarks, "That while the sulphuretted alkali fits the waters for bathing, in cutaneous or other complaints, such water will part with its sulphuretted hydrogen very slowly, so as to retain more sulphur in combination when heated, than some waters which, at the common temperature, contain more. Also, that the soda which it contains obviously renders it likely to be serviceable to those disorders for which that alkali is usually administered in other forms,—as dyspepsia, indigestion, gout, gravel, &c."

Comparison of results of Meteorological Observations for the months of June, July, August, September, in the years 1827-28-29-30, from the journal kept at the Philosophical Hall, Leeds.

	DATE.	THERMOM.			BAROMETER.			Rain in inches.	Prevailing Winds.	STATE OF WEATHER.
		Greatest Height.	Least Height.	Mean Height.	Greatest Height.	Least Height.	Mean Height.			
1827	June	75	43	66	30.250	29.275	29.757	0.84	W. and NW.	Very fine and dry.
	July	79	48	70	30.325	29.450	29.923	1.31	W. and SE.	Tolerably fine.
	Aug.	75	45	64	30.325	29.690	29.559	2.83	W. and NW.	Ditto throughout.
	Sept.	70	40	62	30.500	29.160	29.834	1.66	N. and W.	
1828	June	81	48	59	30.150	29.035	29.523	2.96	W. and S.	[quent showers.
	July	78	50	59	29.850	29.000	29.339	5.76	NW. & SW.	Gloomy, with fre-
	Aug.	79	43	61	30.185	29.025	29.649	2.87	W. and S.	[showers.
	Sept.	78	38	57	30.470	29.000	29.753	2.20	S. and E.	Tolerably fine, with
1829	June	74	42	59	30.260	29.400	29.712	2.10	W. E. NW.	Gloomy, stormy, rain
	July	75	44	60	30.075	29.100	29.616	5.17	W. SW.	Very showery & dull
	Aug.	72	47	58	30.130	28.925	29.614	6.66	W. NW. SE.	
	Sept.	64	40	52	30.150	29.025	29.549	2.20	W. SW. NW.	Tolerably fine.
1830	June	70	42	55	29.960	29.225	29.621	3.59	W. NW.	Gloomy & showery.
	July	83	47	54	30.250	29.135	29.733	3.45	W. SW. SE.	Showery weather.
	Aug.	68	43	57	30.070	29.025	29.341	1.95	W. SW. SE.	Generally fine.
	Sept.	63	40	54	30.140	28.955	29.548	4.52	W. SE. SW.	Rainy and stormy.

MEDICAL REPORT FROM JULY TO OCTOBER,

1830.

With the exception of about ten days, from July 25th to August 5th, the weather has been generally cold—on one day the thermometer rose to about 80. From the above table, it appears the average mean temperature of the Summer was 55, ten degrees lower than that of the Summer of 1827, which however was by no means a hot summer. The quantity of rain which fell is considerable, amounting to inches 13.51, being about three inches less than fell in the course of the preceding summer; half an inch less than the rain of 1828, and more than double the quantity of 1827. The past summer has been, consequently, cold and damp, wanting the usual character of summer. The diseases peculiar to that season have been, therefore, less numerous and less severe. The weather has been popularly called *unseasonable*, on the same principle that a mild, open winter is deemed prejudicial to health. It is almost unnecessary to inform our scientific readers, that both these opinions are "vulgar errors." At the early part of the present season, the diseases most prevalent were such as are more particularly incidental to the spring of the year.

During the cold damp weather of June, catarrhal and rheumatic affections of a slight kind were rather more common than is usual at that season. In some parts of the town, small-pox has been rather extensively disseminated, and has proved fatal in many instances, particularly amongst children. Many of these cases of post-vaccine variola have been seen, but in every instance it has proved mild, and so greatly modified, as to be with difficulty recognised. *Scarlatina* has presented itself in a few places, but in the town of Leeds it has not existed as an epidemic. In

some of the neighbouring villages, however, it has assumed that character. At Horsforth, a village four miles from Leeds, many cases of it appeared in the months of July and August. The efflorescence of the skin was almost always united with inflammation of the tonsils: in some cases the latter symptoms existed alone, and often degenerated into deep, extensively black ulcerations, for which no local application answered so well as a strong solution of the chloride of lime, or soda, as a gargle. We have not seen nor heard of measles during this period. Continued fever has prevailed rather extensively in some parts of our district, chiefly amongst the lower orders. The circumstances which have predisposed that class of individuals to the invasion of fever, are not so obvious. In this district wages are generally good, and the condition of the labouring classes comfortable. We have not been able to discover any peculiarity of local situation, by which the several districts of fever have been marked, either in respect to elevation, drainage, or exposure to perceptible noxious agencies. Of eighty instances which have presented themselves to us at the House of Recovery, during the past season, the leading symptoms have been those of mild continued fever, beginning with rigors more or less distinct, succeeded by slight head-ache, and prostration of strength. A few have been cases of simple excitement. In a majority of cases, symptoms of bronchial inflammation and abdominal affection have supervened. The organs of the chest and abdomen have been, in some instances, *consecutively affected*, the morbid action being either entirely transferred from one part to another; or the first affection remaining, another part has become implicated in the disease; and then diarrhæa has been often a troublesome symptom. In three of the fatal cases, intestinal hemorrhage supervened a short time before death: in one instance it took place during apparent convalescence, suddenly reducing the vital energy so low, that no subsequent effort could raise the patient. Though this symptom has not been uniformly fatal, it has never appeared to us a critical occurrence. In one case of this kind, which we had an opportunity of examining after death, the only morbid appearance was very slight injection of the vessels of the mucous lining of the small intestines.

When the fever was the subject of treatment, at an early period the remedies employed were chiefly purgative, as calomel with jalap, castor oil, infusion of senna, and the warm bath, or frequent tepid sponging. The subsequent course was directed rather by a vigilant attention to the development of symptoms, than by any leading curative indication. If the head-ache was severe or permanent, leeches to the temples, cold applications to the shaved scalp, and frequent pediluvia comprised the principal means. General bleeding was seldom used; and in those cases where it was employed, the relief obtained seemed only temporary, and a more tedious convalescence ensued.

In the bronchial affection, leeches, blisters, ipecacuan. alone, or with small doses of pil. hydrarg. and opium, or the hydrocyanic acid, generally answered well. Diarrhæa supervening at a late period, was combated either by rhubarb and opium, or repeated small doses of hydrarg. c. cret. with or without pulv. ipecacuan. comp., which internal remedies, were sometimes conjoined, when this symptom was urgent, the external application of spir. terebinth. followed by hot fomentations.

The cases of dysentery which have appeared, have been, with few exceptions, those of a comparatively mild disease, generally recovering speedily under the use of an opiate, followed by, or alternated with, moderate doses of some unirritating purgative. This disease however has, in some instances, passed into a lingering and somewhat intractable form of fever.

The occurrence of cholera morbus has been still more rare than that of dysentery. In the practice of the Dispensary not a single case has been treated. We have seen two or three cases, all of which were attended with that sudden collapse, urgent vomiting, great anxiety, and spasmodic pains in the lower extremities, which are characteristic of this disease. One of these cases, that of an elderly female, whose previous health had been impaired by great mental anxiety and loss of rest, proved fatal about forty eight hours from the first attack, notwithstanding the employment of the most prompt, persevering, and vigorous measures. The first symptom in this case was vomiting, followed by a very copious alvine evacuation; great exhaustion supervened; the pulse became feeble and quick, the skin cold, the eyes sunk in their orbits, and most distressing thirst prevailed. We saw the

patient about twenty hours after the commencement of these symptoms: she vomited, every quarter of an hour, a thin, inodorous fluid, not unlike whey in appearance. The alvine evacuation was of the same kind, quite devoid of fæces. The cramps had extended to the arms and trunk; the surface was deathly cold; and the face hippocratic. The most appropriate remedies had been already used, without affording even alleviation. External warmth with friction, opiates in different forms and combinations, calomel, ammonia, brandy, and various other stimulants, produced scarcely any perceptible effect. Every hour the powers of life seemed visibly to ebb, but the sensorial functions remained undisturbed until the last. No examination was permitted.

A medical friend in a distant part of the county, has informed us of two similar cases, which occurred to him, in the course of the present summer; one of which proved fatal in twelve hours from the attack. It was that of a young man who, on his return from York county election, in travelling to and from which he had undergone excessive fatigue, was seized with vomiting and purging, and cramps in the right leg. The effects of apparently well-directed art were here also unavailing. He died at the end of ten hours from the seizure.

We were more successful in our other cases, which were scarcely less unpromising than the one we have related. We have found the hot-air bath, introduced under the bed-clothes, an invaluable auxiliary in the treatment of the alarming collapse; and where any of the ordinary preparations of opium have been rejected, the acetate of morphia in repeated moderate doses, (gr. $\frac{1}{4}$) every hour or two, until some relief was obtained, has proved of the greatest utility.

Notwithstanding the profusion of unripe fruit, the cases of diarrhæa have neither been plentiful nor severe.

Leeds, Oct. 20, 1830.

Chester General Infirmary.—This Institution is at present undergoing extensive alterations and improvements. Its two great wards have been divided into several apartments: additional wards and nurses' rooms have been erected; warm vapour and medicated baths; water closets, and a variety of new accommodations have been introduced, highly important to the medical capabilities, as well as to the economic arrangements of the House. In consequence of these changes, about forty additional beds, will be provided, and a more complete system of classification obtained. The outlay arising from these alterations will amount to about £3000.

We are sorry to perceive that the Trustees of this Institution have not extended their improvement to the fever-wards, in the upper story of the House, which, notwithstanding the celebrity they acquired, as the scene of the veteran Haygarth's first experiments to shew the limits of contagious fever, we have always considered as the most imperfect part of the building.

The wards are low and deformed by projecting wooden beams, which are by no means desirable in an atmosphere in which contagious miasmata are destined to exist. The ventilation is not sufficiently free, and it is injudiciously carried on through the open space between the ceiling and the roof. The height of the wards might be increased by removing the ceiling so near to the roof as to interpose a body of air, merely large enough to screen the room from the effects of heat, conducted from the roof in summer. We think the number of windows might be increased with advantage. There is only one large ward for the male fever cases, and another for the females. Two or three smaller wards for severe cases appear to us to be indispensable, and might be readily obtained at either extremity of the present rooms. The venereal wards are also most defective in point of ventilation, and are of an exceedingly sombre character, the light being admitted only through some narrow and badly situated sky-lights. We should fear that phagedenic, or sloughing sores, would in these wards, infect the confined atmosphere and speedily terminate the existence of the patient. We cannot conceive that they are adapted for the speedy cure of many, even of ordinary cases of syphilis. These imperfections may be obviated very easily, by opening one or two additional windows, which, if glazed with ground glass, would prevent all external communication. If the partial and ill-contrived lights be intended to give the appearance of a place of punishment, to wards intended as institutions of mercy, we consider that the principle implied is most erroneous, and one calculated to limit the benevolent operations of this part of the institution.

The Dead-house is at present most injudiciously situated close to one of the passages and entrances of the Infirmary, where it is exposed to observation, and, in cases of contagious disease, would circulate miasmata through every gallery of the House.

We hope that the Trustees of the Infirmary, who have been actuated by so laudable a spirit of improvement, will not allow these defects, which are so obvious as to impress the mind of every visitor, and whose removal might be so easily accomplished, to mar the good work of Reform which they have so spiritedly undertaken. We were much pleased with the ingenious contrivances in various departments, the judicious arrangement of rooms, and minute attention to hospital economy, which was, in other respects, exhibited in this Institution, whose history is already strongly associated with that of medical science. We have great pleasure in informing our readers that we shall be able to present to them, in the ensuing number, a communication describing more minutely, many of the improvements in the internal arrangements of this Establishment, which, as a whole, presents some interesting features of the principles of Hospital economy.

The Circumstances of the late Mr. Huskisson's fatal Accident.—To the Editors of the North of England Medical and Surgical Journal.—Gentlemen.—The Right Honourable Mr. Huskisson's melancholy case having excited, in a considerable degree, the public sympathies, I am induced to avail myself of your respectable Journal, to state the particulars, as far as my observations extended. Accompanied by Messrs. Whatton, Garside, and White, I was introduced to Mr. Huskisson, at the vicarage, in Eccles; he was lying on a couch—his countenance was pallid—his expression was firm and collected, though he suffered from frequent spasmodic pains—his pulse thready and extremely feeble—his extremities cold, indicating the powerful shock his constitution had received, and which had not been succeeded by any reaction. On inspecting the limb, the Tibia and Fibula were comminuted, and the integuments much bruized and torn—the Os Femoris was broken into a great number of small, angular, and rugged fragments—the Rectus and Triceps muscles were quite denuded and crushed, and the Sartorius torn across. The sheath of the Femoral Artery was laid bare, and the superficial nerves were exposed and torn. The accident had occurred about two hours before we arrived. Lord Wilton had, with great judgment, applied a handkerchief and stick as a field Tourniquet, which had restrained the hemorrhage. The quantity of blood which had escaped would not have been considered great, had it occurred in a strong and vigorous man; but in an individual sixty years of age, and previously enfeebled by disease and a recent operation, it was sufficient, in conjunction with the severe shock occasioned by the accident, fatally to depress the vital powers.

Notwithstanding the premonition which these alarming symptoms afforded, every thing was prepared for amputation, but we discovered that the exhausted state of our patient rendered such a step highly improper. With the hope therefore of producing a favourable impression on the nervous system, and thus rousing the vital powers, in order to enable him to bear the operation, cordials, viz. brandy, ammonia, and laudanum, were liberally administered—flannels, moist and hot, and sprinkled with laudanum, were applied to the limb, and bottles of hot water to the feet, and to the sides of the body. The Femoral Artery was secured, in order to prevent further hemorrhage. I lament to state, however, that these remedies were ineffectual, and that the fatal depression of the vital functions sensibly increased. After a short period, he complained of an extremely oppressive sensation at the præcordia—the pulse became imperceptible at the wrist—he suffered from a general sense of coldness; this was succeeded by rapid and laborious respiration, and, in nine hours from the period when the accident happened, he quietly breathed his last. During this period, no moment occurred that afforded a favourable opportunity for the operation, though our most anxious attention was directed to every symptom which could indicate it. Our patient gradually, but uniformly, declined, and the succession of his symptoms was such only as rapidly conducted him to the deplored catastrophe

I am, Gentlemen,

Yours respectfully

J. A. RANSOME.

*St. Peter's Place,
Manchester, 10th Month, 1830.*

Operation of Lithotrity—Manchester.—In consequence of some arrangements which had previously been suggested by Dr. Holme, and owing to the invitation of Mr. Wilson, Mr. Costello visited Manchester, for the purpose of displaying to the professional community, the most improved form of the instrumental apparatus employed in Lithotrity, and also of performing the operation. He attended a meeting of the Literary and Philosophical Society on the evening of Friday, October 1st, and its members listened, with much pleasure, to an elaborate statement of the origin and nature of the operation which Mr. Costello delivered, and which he illustrated by an exhibition of his exceedingly ingenious and beautiful instruments. On the following morning, in consequence of an invitation which he received from the medical board of the Royal Infirmary, he delivered a minute demonstrative lecture, in the Theatre of that Institution, before the pupils and several professional gentlemen residing in the town. Mr. Wilson, with great liberality and professional zeal, permitted Mr. Costello to operate upon a patient, who had two years and a half previously been the subject of lithotomy under his care. The calculus extracted at that period was a triple phosphate, and was about the size of a hen's egg. A slight delay in the operation occurred, owing to the circumstance that the instrument which was first introduced allowed the water to escape, from some slight imperfection in a cork by which the central aperture is closed. After the bladder had been a second time injected, the instrument was again introduced with the greatest facility, and without occasioning any considerable uneasiness to the patient. The stone was immediately grasped by the forceps, and it appeared, from two scales graduated upon the opposite extremity of the instrument (one of which indicates the degree in which the forceps are opened, and the other, the depth to which the drill is protruded when it strikes the stone), that the calculus was about as large as an ordinary peach stone. By a slight application of the drill to the surface of the calculus, Mr. Costello discovered that it was soft, and immediately informed the spectators that it could be crushed. In a few seconds, by the forcible retraction of the forceps and protrusion of the drill, the stone was heard to crumble in the interior of the bladder. By alternately protruding and retracting the drill with a boring motion, the fragments were still further reduced to powder—the instruments were withdrawn, and the patient immediately expelled in the urine, without any pain, about half a salt spoonful of small fragments, and of the powder of a phosphatic calculus. Considerable quantities have since escaped with the water, but Mr. Wilson sounded the patient a few days ago, in the presence of Mr. Hodgson of Birmingham, and Mr. Soden of Bath, and some other professional gentlemen, and discovered that a stone, of moderate size, still existed in the bladder. Mr. Costello is expected in Manchester, to complete the success of the operation. The patient's health has been undisturbed, and he is in a favourable state for the repetition of the experiment.

Manchester, Oct. 20th, 1830.

TO CORRESPONDENTS.

We should be unjust to ourselves, and we might be considered ungrateful to the professional community, if we did not avail ourselves of the earliest opportunity of acknowledging the very warm and extensive assurances and testimonies of support which our literary enterprise has received. For the satisfaction of those who feel interested in its success, we may remark, that our most sanguine expectations have been fully realized, and that nothing is necessary for the perpetuity and increasing usefulness of the Journal, but the continued active and zealous co-operation of our correspondents. We have been favoured with many contributions which, though in point of ability and scientific character highly creditable to their authors, are too remotely connected with those practical purposes which we originally contemplated, and a strict adherence to which, while in its tendencies most useful, can alone satisfy the prevailing taste of the present order of medical readers. While our plan, therefore, is by no means exclusive, we would respectfully, but urgently, invite our friends to favour us with the results of their clinical experience, in which expression we comprehend all those inquiries which may be subservient to a more enlarged acquaintance with disease, in its symptoms, and pathological character, and the improvement of our therapeutic methods.

As our Journal was undertaken solely on public grounds,—with a view to supply an important professional desideratum, we conceive that we may, without any indelicacy, claim the general and effective patronage of our brethren. We have no wish to monopolize the credit of the undertaking; and with regard to profit, we shall be sufficiently rewarded if the sale of the Journal shall continue to indemnify us for the cost.

We were enabled by the liberality of friends, to embellish the first number with several lithographic plates; and we intend to continue, as frequently as possible, to admit similar illustrations of diseased structure. We had commenced the preparation of two plates for this quarterly fasciculus; but some accidental circumstances have occasioned an unavoidable delay, and we have therefore reluctantly omitted, together with the drawings, the Papers which they were intended to illustrate. Owing to the pressure of original Communications, we have again printed a sheet and a half more than we originally intended should constitute a number of the Journal, and than is usually given in similar works for the same price. We have, however, been still obliged to postpone some valuable original communications, and, amongst them, all the cases of Diseases of the Circulating System, with which our correspondents have favoured us. For this omission we request their indulgence.

In the next numbers will appear communications from Drs. Traill and Williams, and Mr. Minshull, Liverpool; Mr. Sandwith, Beverley; Mr. Wilson Overend, Sheffield; Dr. Scholfield, Darlington; Dr. Hunter, and Dr. Williamson, Leeds; Mr. Dunn, Scarborough; Dr. Moulson, Halifax; Dr. Black, Bolton; Mr. Goodlad, and Mr. Woodcock, Bury; Dr. Cummings, and Mr. Bennet, Chester; Dr. Kay, Mr. Wilson, Mr. Whatton, Mr. Fawdington, Mr. Robertson, and Mr. Windsor, Manchester; with two or three lithographic illustrations, and also several Hospital and Dispensary Reports.

ERROR.—Page 184 line 11, for *early* read *easily*.

THE
NORTH OF ENGLAND
MEDICAL AND SURGICAL JOURNAL.

FEBRUARY 1, 1831.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Remarks on the Theory and Treatment of Hooping-Cough, especially in its graver forms.* By HUMPHRY SANDWICH, Esq., Surgeon, Bridlington.

EVERY attempt to supplant the successful advances of scientific investigation in those departments of medicine, which shelter, behind an acknowledged obscurity, a blind and reckless empiricism, should be met and put down. A feeling of this kind is my apology for appearing as the advocate of the more modern theory of Hooping-cough, in opposition to the resolute defenders of the Cullenian opinion of its purely spasmodic nature. “To Dr. Watt belongs the honour of having first shewn the dependence of chincough on bronchial inflammation. In attributing it exclusively to this source, Watt was followed by Marcus, 1816;—Alcock, 1820;—Guersent, 1823;—Pearson, 1824;—Dewes, (Treatise on the Physical and Medical Treatment of Children,) 1825;—and Fourcade-Prunet, 1826.”* On this, which is the theory advocated in these pages, Dr. Palmer has grafted the refinement of Desruelles, that the bronchial inflammation is essentially connected with cerebro-

* Dr. Shirley Palmer’s Popular Illustrations of Medicine, p. 200.

spinal irritation. Desruelles, who admits the inflammation of the bronchi to be always primitive, and the irritation of the brain consecutive, yet contends that the peculiarly disordered respiration is dependant on cerebral irritation. It is more probable however, that the spasmodic action in Hooping-cough, is the simple result of inflammation, attacking the delicate organization of the glottis and larynx, parts which are most easily thrown into spasm, under any kind of irritation. The fact, that a sort of chincough may be artificially induced, has not escaped the observation of Dr. Watt, who relates a case in which the inspiration of sawdust, by irritating the glottis, brought on the counterfeit disease. The mucous membrane of these parts of the air-tube seems to be the first affected in the course of the complaint. Hence some degree of hoarseness is one of the earlier symptoms. Hence also very young children are the principal sufferers in Hooping-cough,* as well as in the analogous affection of croup. For the changes which the larynx undergoes, as puberty approaches, seem to lessen both the susceptibility to the disease, and its fatality. And when the disease happens to attack adults, the distinctive hoop seldom or never occurs; a fact, obviously dependant on the anatomical difference in the structure of the larynx and glottis. The frequency of cough, and violence of its spasmodic hoop, will be dependant on the different states and stages of the inflammation. Blood flowing from the continuous membrane of the nostrils, in the epistaxis which often occurs, will moderate the affection of the larynx. Nor is it necessary to explain such relief by adverting to the circuitous hypothesis of its doing so, by unloading the cerebral vessels, and thus lessening the influence of cerebral irritation on the respiratory organs. The whole air-tube and its branches are prone to participate in the primary inflammation of the glottis. Hence there is an increase of expectoration, which is frequently streaked with blood. The analogy which obtains between Hooping-cough and bronchitis, is noticed by the best writers on both subjects. Dr. Watt pursues it at great length; Drs. Darwin and Badham allude to it very pointedly; and Dr. Hastings asserts the very general termination of Hooping-cough in bronchitis before it proves fatal. The parallelism of the pulse of almost countless rapidity in the severer bronchial inflammation of Hooping-cough, and the acute bronchitis of Badham, and in croup, forcibly arrested the attention of Dr.

* See an instructive Table, illustrative of the mortality of the complaint at different ages, in Dr. Watt's Treatise on Chincough, p. 30.

Watt.* Catarrhal symptoms invariably precede the full formation of the disease, which is essentially a febrile one. Though Dr. Palmer would negative this conclusion, from the occasional absence of febrile heat, thirst, and an accelerated pulse, yet the torpid bowels and scanty urine, which are admitted symptoms, are, along with other signs of cerebral disorder, as coldness in the back and extremities, inexplicable on any other hypothesis. On this point Dr. Darwin has remarked, that "this complaint is not usually classed among febrile disorders; but a sensitive fever may generally be perceived to attend it during some part of the day, especially in weak patients."† "It may be so slight," says Dr. Watt, "as hardly to deserve notice; but still, to an attentive observer, who has opportunities of seeing the patient day and night, it is abundantly obvious. I have remarked it even in those favourable cases where the appetite continued good, and where the patients seemed to suffer little or nothing in their general health."‡ Modern pathology recognizes a condition of the system in fever, in which the re-action is imperfect, while different tissues and organs are suffering under various degrees of congestion. Ordinary catarrh and the milder varieties of Hooping-cough, are examples of such congestive fever in its simplest forms; but there are others which are equally insidious and destructive. Dr. Hastings has described a catarrhal variety of bronchitis, which attacks young children in the spring of the year, in which the signs of the existing inflammation bear no correspondence with its extent and danger.§ The low type attributed to the fever in some of the graver forms of Hooping-cough, is clearly a modification dependant wholly on the disordered respiration, and more or less impervious state of the inflamed bronchial membrane, by which the arterial blood is imperfectly decarbonized, to the consequent injury of the functions of the nervous system. It is practically important to view the accompanying fever through a pathological medium; for in proportion to the relief afforded to the respiratory organs, will the fever be less and less depressing to the vital powers. The phantoms of a doubtful Cullenian pathology, on the other hand, might deter us from the prudent but fearless prosecution of our leading object, to relieve the inflammatory condition of the windpipe.

* Watt's Treatise on Chincough, p. 54—118.

† Zoonomia, vol. iii. p. 377.

‡ Treatise on Chincough, p. 50.

§ Hastings on Bronchitis, p. 168.

If observation had not been supplanted by hypothesis, Sydenham's practice, in the acute forms of Hooping-cough, would now have prevailed, to the exclusion of numerous empirical remedies. His methods indeed were those of all the great observers of that age, as of Willis, who just preceded, and Huxham, who followed him. It is melancholy, therefore, to find so little that is satisfactory in the theoretic recommendations of many of the moderns; and that, from our having perpetually to lay anew the foundation of sound practice in acute diseases, science should be repressed in its advances. The prevalence of the spasmodic theory of Hooping-cough has vitiated much of what has been written on the subject; and, while it has thrown into the shade the merits of active treatment, has too exclusively directed the attention of the medical student to those remedies, which can rightly hold only a subordinate place in practice. Even Dr. Good's observations on the disease have this defect, and his recommendation of the lancet is neutralized in some degree by the spasmodic theory, which, while it circumscribes its employment, gives undue prominence to less efficient remedies.* Writers of this class have been misled by the spasm, which affects the organs of respiration in Hooping-cough, to set aside the supposition of inflammation, and to treat as visionary all those exquisite signs of peripneumony which, in extreme cases, mark every example of the complaint. But it would be just as philosophical to deny the existence of inflammation in croup, because the consequent spasm of the glottis and larynx remarkably affects the breathing, the sonorous inspirations of which greatly resemble, as Dr. Kellie has remarked, the drawback of Hooping-cough.† The striking resemblance indeed between the two diseases,‡

* Study of Medicine, vol. i. p. 556.

† Cheyne, Pathology of the Larynx and Bronchia, p. 129.

‡ The following case, which I have witnessed within the last few weeks, shews how nearly the two diseases are related to each other. The patient was a fine vigorous boy, aged four, who had suffered for some weeks from deranged bowels and cerebral disorder. I observed, along with these symptoms, a slight hoarseness; but prescribed leeches to the temples, and free calomel purgation for the more predominant ailments. On the following day the respiration became noisy and embarrassed, and the voice was lost in a whisper, or, when raised, hoarse and puling. Towards evening violent fever arose, and during the night he was harassed by an incessant barking crouping cough; in short, life was jeopardized by all the signs of incipient croup. Two general bleedings from the arm, (the blood exquisitely sisy,) each to the extent of five fluid ounces, leeches to the thyroid cartilage, a blister, emetics, purgatives, and the warm-bath, consecutively employed, produced a remission of the symptoms of croup. The cough now assumed a distinct hoop, which gradually disappeared in a few days, and the child became convalescent. An infant sister had, a short time previously, returned home convalescent from an attack of pertussis.

has induced Dr. Marcus to believe in their identity: and if the dogma of spasmodic croup be untenable, as Dr. Cheyne has ably shewn, and its varieties are all inflammatory, differing only in degree, we are at once furnished with an analogy in favour of a similar interpretation of the different forms of Hooping-cough. The benefit which has sometimes followed the use of powerful sedatives, prescribed as anti-spasmodics, has also been laid hold of as an unanswerable confirmation of the pure spasmodic theory. But a fact like this proves little; for mere symptoms may be palliated by remedies, which make no decided impression on the disease itself. Besides, some of the anti-spasmodics have, at least in certain states of the system, confessedly anti-inflammatory virtues. This is true of opium, and digitalis, and will not be denied to prussic acid. The frequent failure, however, of this celebrated anti-spasmodic, when trusted to alone, demonstrates the fallacy of the theory, which the discovery of so powerful an auxiliary to second its pretensions, promised at once to perpetuate. Dr. Granville himself confesses, that “he has occasionally been *altogether disappointed* in his expectation of the effects of the prussic acid in Whooping-cough.”*

“I have in vain looked,” says Dr. Cheyne, “for *dissections* of spasmodic croup in the writings of those, who, with the greatest zeal, maintain the existence of spasmodic croup as a distinct disease.”† But the advocates of the pure spasmodic theory of Hooping-cough, have thrown down the gauntlet on the very arena of morbid anatomy. This has been done by Dr. Granville, who seems to imagine, that the inspection of one page of the exhaustless volume of post-mortem evidence, will suffice for a more careful perusal of its entire contents. Hence he tells us, that “in the first volume of the ‘*Memorie Scientifiche e letterarie dell’ Ateneo di Treviso*,’ published in 1817, there is a paper containing the result of extensive pathological inquiries, made by several physicians and surgeons of that town, into the nature and seat of various complaints. On the subject of Whooping-cough, which had been epidemical in 1816, at Treviso, a table of twenty-three anatomical examinations of children, after death, is given; from which it appears, that in all of them there were, more or less, signs of turgidity of the blood-vessels in the head, or serous effusion; that no symptoms of disease occurred in the chest, except in a few individuals, who presented an incipient phlogosis or plethora, or serous effusion in that cavity. The wind-pipe

* Granville on Prussic Acid, p. 319.

† Cheyne’s Pathology, &c. p. 193.

was found constantly healthy, although lined with a frothy, blackish, and adhesive mucus.”* On this precarious basis rests Dr. Granville’s sweeping conclusion, that “the Whooping-cough, in itself, *is never an inflammatory disease, for no traces of inflammation have been found in the respiratory organs of those who have fallen victims to it.*” An equally infelicitous but confident mode of expressing himself, pervades the *sthenic* productions of Dr. Brown! Whatever inference may be drawn from the above document as to the nature of the epidemic Hooping-cough of Treviso, it would be most unphilosophical to form our opinion of the nature of Hooping-cough in general from a few insulated examples. We shall advert, therefore, to other dissections besides those of this epidemic; and, if we mistake not, the latter will appear to be merely a seeming exception to a general rule, easily reconciled with the supposition of inflammation of the air-passages being the usual concomitant of the disease. At any rate, as they cannot neutralize the overwhelming evidence from other sources, Dr. Granville’s sweeping conclusion must fall to the ground. With regard to the morbid phenomena in the cases before us, reasoning on Dr. Granville’s own summary of them, and taking for granted the minuteness and correctness of the dissections themselves, which, as to both, is granting much to an opponent, it is a palpable contradiction to the document from which the inference is drawn, to say, that “*no traces of inflammation have been found*” in the pulmonary organs. He himself states, that “when the complaint has been very violent, and has lasted a great length of time, and then only, tokens of inflammation have been found in the brain, as the result of strong and often repeated spasms of the organs of respiration, producing a great determination of blood to the head.” The violence and duration of the complaint, we suppose, may be predicated of the fatal cases in the epidemic of Treviso. We have thus a ground laid for the morbid phenomena in the brain, on Dr. Granville’s own hypothesis. And it is agreeable to analogy to suppose, that the secondary affection of the brain might so far lessen the influence of the original complaint, as to cancel the traces of inflammatory action, if they previously existed in the respiratory organs. A similar remark is made by Dr. Palmer, relative to one of the sources from which error has arisen in investigation of the morbid anatomy of Chincough. “A child,” says he, “is destroyed by an affection of the brain, connected with the

* Granville on Prussic Acid, p. 305.

disease in the latter stages; and, consequently, after every visible trace of the bronchial inflammation has disappeared. On dissection, the bronchial membrane is found in a natural condition; and hence an apparently correct, although erroneous inference may be drawn, that a morbid state of this membrane constitutes no essential character of Hooping-cough.”* This opinion is countenanced also by the case of metastasis, to be hereafter described, in which the affection of the brain wholly relieved the cough and pulmonary symptoms, which again appeared when the cerebral irritation was relieved. An analogous phenomenon is noticed by Dr. Palmer in the metastasis of the inflammation from the air-passages to the lungs or pleura. And two cases of dissection are given by Dr. Watt, in which, as he remarks, “the inflammation, on spreading to the deeper-seated parts, seems to have totally left those which it first occupied.”† But the inflammatory nature of Hooping-cough is proved as incontrovertibly *by dissection*, as by observation of symptoms and the effects of treatment. The results of Mr. Alcock’s post-mortem enquiries are thus described: “I soon found that the usual mode of making the examination of morbid appearances, that is, examining only the head, the chest, and the abdomen, afforded no clue to the nature of the disease; and though the lungs were generally more or less affected, there did not appear sufficient organic derangement to have produced death. I then determined to examine carefully the whole of the air-passages, and there found sufficient to account for the death: for it became evident that it must have arisen from suffocation. The larynx, in every instance, afforded indications of increased vascularity, and the accumulation of mucus or puriform fluid in the air-passages was sufficient to prevent respiration. These circumstances, collated with the symptoms during life, rendered it easy to conceive that the whole might be the result of inflammation; and the fortunate result of a mode of treatment founded on this principle, (as well as the repeated observation of the morbid appearances,) have confirmed me in this opinion.”‡ Mr. Alcock’s remarks warrant the utmost jealousy of dissections in Hooping-cough; as do the observations of Laennec, who, in ascribing *dilatation of the bronchi* to Hooping-cough, as “the most frequent cause of all,” asserts, that “this organic lesion seems to have been hitherto entirely overlooked both by the anatomist and the practitioner. This oversight is

* Palmer’s Popular Illustrations. p. 183. † Watt’s Treatise, p. 173—181.

‡ Alcock’s Lectures on Surgery, p. 118.

easily accounted for by the circumstance, that, as it generally occurs in a small portion of a bronchial tube, when observed, it has been mistaken for a larger branch. It can only be detected by tracing the individual bronchial tubes to their ultimate ramifications,—*a thing which is rarely done in our examination of the lungs.*”* He then relates a case of Hooping-cough furnished him by M. Cayol, in which “the mucous membrane of these dilated tubes was throughout of a deep red or livid color, thinner than natural, but without any breach of continuity, and was evidently the secreting source of the purulent matter contained in it.” We have the authority of Martinet to assert, that “in fatal cases it is usual to find an inflammation of the mucous membrane lining the larynx, trachea, or bronchi, and sometimes even some ulcerations.”† In the cases related by Dr. Watt,‡ when the disease proved fatal, on dissection the mucous membrane of the lungs always bore evident marks of extensive inflammation. In a statement furnished by Dr. Malden to Dr. Hastings, relative to three fatal cases of pertussis, we are told, that “on examining the bodies about twelve hours after death, the trachea and bronchi, as far as they could be traced, were found highly inflamed, and loaded with a frothy mucus,” in addition to signs of inflammation in the pharynx, œsophagus, stomach, and intestines.§ Dr. Hastings himself states, that in Hooping-cough “dissection shows the trachea and bronchi highly inflamed, and the latter and the air-cells filled with a whitish pus-like fluid.”|| In addition to these statements, derived from the highest authorities, we may subjoin Dr. George Pearson Dawson’s important testimony to the fact of there being inflammation of the glottis. “My opinions were formed above twenty years ago, in consequence of Sir Astley Cooper calling my attention to the fact of pertussis being, in the first instance, an inflammation of the glottis. Dissection discovers the glottis to be highly inflamed; also the larynx, trachea, and lungs, and occasionally the bronchi and air-cells, are filled with a white purulent matter. Serous accumulations are in the pericardium.”¶ With this opinion, of there being inflammation of the glottis, corresponds that of Straack, who

* Laennec’s Treatise on Diseases of the Chest, by Forbes, p. 76.

† Martinet’s Manual of Pathology, by Quain, p. 164.

‡ Watt’s Treatise, p. 52, 111, 122, 131, 145, 158, 168.

§ Hastings on Bronchitis, p. 203.

|| Hastings on Bronchitis, p. 201.

¶ Dr. George Pearson Dawson’s Nosological Practice of Physic, p. 131.

maintains that the cause of the disease is seated in the glands of the fauces and glottis. And the learned Astruc's testimony to the same point, is equally emphatic: "As for my part, I may positively affirm, that it principally consists in the inflammation of the superior part of the larynx and pharynx, and more particularly of the latter, which is sometimes ulcerated, *with a constriction of the glottis, as dissections prove.*"* Besides unequivocal and overwhelming proof of inflammation in the air-tubes themselves, Marcus, Guibert, Palmer, Watt, Armstrong, Lettsom, and others, have recorded numerous instances of the usual results of pleurisy, pneumonia, phthisis, and pericarditis.

The demonstration of the inflammatory theory of Hooping-cough by dissection, will admit of important illustrations from the history of the disease and the effects of treatment. With the observations of others I shall blend my own, on the phenomena and treatment of a recent epidemic of this kind at Bridlington. Like other epidemics, Hooping-cough exhibits some variety of character, and the inflammatory nature of the complaint is more palpable in some seasons than in others. A majority of the cases, which fell under my notice in the present year, (1830,) exhibited the usual signs of acute or sub-acute inflammation. In cases of the latter description, the disease was greatly moderated by leeches applied to the integuments covering the thyroid cartilage, as recommended by Dr. Dawson. It was sometimes necessary to repeat their application several times. Our object is, as Dr. Palmer correctly states it, "to avert the assumption of its more active character." When cerebral congestion is apparent, the leeches may be applied with advantage, as recommended by the latter authority, "posteriorly between the shoulder blades." Emetics, calomel purgatives, the warm-bath, blisters, and a combination of James's powder and ipecacuan, were employed as auxiliary to depletion. Counter-irritants applied to the spine in those cases in which cough is protracted by the re-action of lingering sensorial irritation, or is dependant on morbid habit alone, will complete the list of remedies. Several examples of the disease, however, in its more exquisite forms, demanded more energetic means to subdue inflammation. In some of these cases, the child lay constantly struggling under the aggravated dyspnœa of acute bronchitis, that "permanent difficulty of breathing, which continues between the coughing fits," as described by Darwin. As might be expected, there was con-

* Treatise on all the Diseases incident to Children, p. 142, &c.

siderable mortality, where professional aid had not been sought.

In the cases which fell under my care, however, prompt and decided relief was afforded by the combined employment of general and local bleeding, ipecacuan and antimonial emetics, the warm-bath, calomel purgatives,* and blisters. And it is in the conjoined use of these measures we confide in the analogous affection of croup, as is ably shewn in Dr. Cheyne's incomparable monograph on that subject. "All our endeavours," he observes, "tend to moderate the increased action which prevails all over the mucous membrane. The bleeding, blisters, emetics, purges, and the bath, are all meant to reduce the power of the arteries, either directly or sympathetically."† From children of four or five years of age, I took about four fluid ounces of blood from the arm or neck: from those under two years, I abstracted about two ounces. The general bleeding was repeated in desperate cases, and in all seconded by leeches. After due depletion, a combination of Dover's and James's powder, at nights, tends to moderate the cough: but from a fear of increasing the strongly-marked tendency to cerebral congestion in this disease, I was restrained from making trial of opium to any extent: all authorities, however, agree in the eligibility of prussic acid as a sedative. All the cases of severity which I witnessed, presented the characters of bronchial rather than pulmonary or pleuritic inflammation. Some were more insidious than others; the dyspnœa being manifest at first on exertion, but gradually becoming permanent. "The great nicety of treating Chincough," observes Dr. Watt, "depends on the early discovery and prompt removal of these symptoms. The state of the pulse, the general debility, and almost every other symptom seem to forbid bleeding, while we know from experience, that it is the only remedy that can save the patient."‡ When the acute inflammatory symptoms were relieved, the complaint assumed a milder type, and declined by degrees. Its worst symptoms, however, were easily revived by imprudent exposure to a cold and humid atmosphere, or a new disease was substituted. The following case is a striking example of metastasis of the diseased action of the mucous membrane of the air-tubes to the membranes of the brain.

* "In the epidemic peripneumony of children, as in croup, calomel appears to me beneficial, not from any specific quality, but by acting as a vomit or drastic purge." Cheyne.

† Do. p. 61. ‡ Watt, p. 235.

Master S., aged 4, became affected by Hooping-cough in May. The attack was severe, but without producing acute symptoms of bronchitis; emetics, purgatives, and the prussic acid made no decided impression on the complaint. After exposure to cold, in the latter end of June, his cough suddenly left him; and general lassitude, loss of appetite, and increased feverishness supervened. The fever, with symptoms of cerebral irritation, increased from the 24th to the 30th, when actual phrenitis demanded more active treatment, than the less violent anti-inflammatory remedies hitherto used. About a tea-cupful of blood was taken from the arm on that day, and seconded by leeches, and free purgation. The general bleeding was repeated on the first of July, and leeches to the temples and the sides of the neck were afterwards several times freely employed. Sleeplessness, and that delirious anguish which mark cerebral inflammation in children, were prominent and distressing features during the severity of the attack: there was also for a day or two rigidity of the spinal muscles, and a peculiar drooping of the head to the left side, with a semi-rotatory motion. The symptoms of cerebral irritation, though moderated by active treatment, did not wholly decline before a fortnight had elapsed from the time of the first general bleeding. The emaciation was equal to what we observe in the most protracted cases of fever. The first clear proof of the entire removal of cerebral irritation, was a return of the cough, with its distinctive hoop,* which continued in a mild form during the whole period of convalescence. Natural and refreshing sleep, at first excessively profound, succeeded to the long-continued scenes of excitement. A change of air finally removed the cough, and asses' milk repaired the wastes of the system. The case just described, illustrates the truth of Dr. Palmer's remark relative to the complications of Hooping-cough, that they "will demand, with great vigilance and energy, a variation of practice precisely corresponding with such change."

The employment of general bloodletting in the diseases of infancy, and especially in those which affect respiration, is sanctioned by the Father of English Medicine, Sydenham, who eulogizes the practice in his account of the measles of 1670. "But if," he remarks, "by reason of too hot cordials, and too hot a regimen, the sick is in danger of his life after the measles go off, (which is very common,) by the violent

* An interesting case of Hooping-cough alternating with Measles, and re-appearing on the decline of the latter, is related by Dr. Ferriar.—Vide *Medical Histories and Reflections*, vol. iii. p. 217.

fever and difficulty of breathing, and other accidents that are wont to afflict those that have a peripneumonia; I have ordered the smallest infants to be bled in the arm, (*vel tenerrimorum infantum venas in brachio secui*,) and have taken away that quantity of blood, which their age and strength indicated, with very great success; and sometimes, when the disease has been obstinate, I have not feared to repeat the bleeding. And indeed many children that have been at the point of death, by reason of this symptom, have been (with God's blessing) cured by bleeding. Nor have I found, as yet, any other certain way to vanquish it."* After further remarking on the safety of this practice in children as well as in adults, he asserts its advantages in other complaints,† but especially in *Hooping-cough*. His words are:—"Prætereo in præsentiarum ingens illud solatium, quod adfert venæsectio infantum pertussi (quam nostrates vocant Hooping-cough) in qua remedia quælibet pectori dicata longo post se linquit intervallo."‡ In the advanced stages of Hooping-cough, however, the utmost prudence and circumspection are demanded in hazarding the use of so Herculean a remedy. For when unusually severe or complicated, so much actual debility is induced from the protracted oppression of the sensorium, that even a moderate bleeding may prove destructive, as is shewn by the following monitory example. "Violent pulmonary inflammation, consequent on chincough, attacked a girl, aged 4, in the Spring of 1810; the difficulty of breathing was so urgent as to menace suffocation: leeching and blistering had been tried without effect: four ounces of blood were therefore taken from the arm; and, ere the bandage could be adjusted, the child died."§ Moreover, in the acute bronchial inflammation of children, whether it be idiopathic, or coupled with measles or Hooping-cough, we cannot rely on general bloodletting, unless in combination with the remedies before mentioned. Of this truth I have the most painful conviction, from the fatal issue of two cases of bronchitis in measles, (one of them occurring in my own child,) in which I neglected the employment of antimonial emetics,|| from

* Dr. Pechey's Translation of the Whole Works of Sydenham. 1705. P. 135.

† The reader is referred to page 111, of my "History of the Bridlington Epidemic Fever," in proof of the efficacy of the lancet in the febrile complaints of children.

‡ Opera Universa Thomæ Sydenham, M.D. 1726. P. 200.

§ Palmer's Popular Illustrations, p. 189. Had the general preceded the local bleeding in this case, the issue might have been different.

|| Emetics, however, are inadmissible in cases of urgent cerebral congestion, as Desruelles has forcibly shewn. Dr. Palmer's remark, that in acute affections of the respiratory organs or brain, they would infallibly aggravate the *pulmonary* as well as cerebral irritation, is one to which we demur; especially when used after an impression has been made on the complaint by bleeding.

too exclusive a confidence in the virtues of general and local bloodletting. To this undue confidence I was led from the wonders I had seen wrought in that complaint by the energetic employment of the lancet. One of the most interesting examples, which occurs to my memory, (it happened in October, 1820,) and of which I recorded some notes at the time, is the following.—After the continuance for a few days of the premonitory symptoms of the disease in a vigorous infant ten months old, instead of the eruption of measles appearing, the mucous membrane of the air-passages became affected, and a mixed state of congestion and inflammatory action rapidly and seriously interfered with the process of respiration. I was called up at midnight to witness a scene of impending suffocation. The dyspnœa was extreme; the lips blue; and the impossibility of relief apparent except from prompt and efficient measures. I immediately abstracted two fluid-ounces of blood from the jugular vein into a graduated measure. The warm-bath was quickly prepared, in which the child was immersed five minutes at the temperature of 100. The respiratory organs soon manifested great relief from their embarrassment, and, in a few hours the characteristic efflorescence of measles appeared on the skin in its most perfect form. Nor had the child an untoward symptom afterwards. Only one form of inflammation of the air-passages destructive in its consequences to life, in which general bleeding seems prohibited, has ever occurred to my own observation. It is an excited and inflammatory action of the mucous membrane, occurring in delicate and strumous subjects under a broken state of health, which, when resolution takes place, destroys life by suffocation from the immense expectoration of mucus which is coughed up, apparently from the whole extent of the laryngeal, tracheal, and bronchial surfaces. The following is a specimen of the disease. Miss W., aged eight years, was placed under my care, with extensive ulcerations in the fauces, and an extremely debilitated state of the general health. Her complaints had been seriously neglected, under a system of domestic quackery. The tones of the voice were singularly nasal and unnatural. By the use of quinine, alterative aperients, and the nitric acid lotion as a gargle, the ulcers healed; and she was approaching a state of convalescence, when she took cold from exposure in the garden. The voice resumed its unnatural tones, with a remarkable increase of general debility. Alteratives and decoction of sarsaparilla were prescribed. An incessant tickling cough, indicative of pulmonary catarrh, quickly supervened; to meet which, leeches were applied to the larynx, and calomel given as a purgative. An abundant expectoration of mucus rapidly

succeeded their application, which was coughed up in great quantities. Relief at first resulted from this process. But it soon became so abundant as to threaten suffocation; and I was summoned to witness this effect in its most appalling form. The child was *in articulo mortis*; the lips and nails blue; the extremities cold; the pulse scarcely perceptible; the pupils dilated; and the respiration rattling and embarrassed in the extreme. Under the hope that the inflammation might be confined chiefly to the larynx, I proposed immediate tracheotomy, which was acceded to. The beneficial effect of the operation was instantaneous and delightful. Respiration was well performed through the artificial rima, into which a cannula was inserted. The lips resumed their florid hue; the eye recovered its wonted lustre; and the child replied to our enquiries. This improvement lasted five or six hours. Cough and expectoration, however, still continued, and by degrees the artificial opening was permanently clogged with mucus. My little patient survived only six hours longer, when she was again suffocated by accumulated mucus, which seemed to be pumped up from the bronchial surfaces. There was no chance of obtaining an inspection of the parts after death.

ART. II.—*Two Remarkable Cases of Disease in the Circulating System.* 1. *Extensive Disease of all the Arteries, with obliteration of the glutæal and right femoral, and consequent paralysis of the right lower extremity and gangrene of the foot.* 2. *Obliteration of the Vena Cava. Fungus Hæmatodes of the left Kidney, &c.* By JAMES PHILLIPS KAY, M. D., Physician to the Ardwick and Ancoats Dispensary, Manchester.

E. F., an old woman, (aged 75) who had been some time bed ridden, had paralysis of the muscles, accompanied by great loss of sensation, throughout the whole of the left side of the body, which had occurred two years before the period when I first saw her. She was then evidently suffering from very general organic disease. She was not much more emaciated and withered, than might be expected in a feeble woman of her age, but the peculiarity of her physiognomical expression indicated serious lesion of some important organ, besides the disease of which external evidence existed.

When I first saw her, slight spots of gangrene had appeared upon the extremities of the toes of the right foot. Her strength

was supported by tonics and stimulants, but these, with the aid of local applications, seemed to exert little influence over the progress of the disease. The gangrenous spots gradually spread, encroached on the surrounding parts, and in the course of a month, by a slow, but uniform progress, had affected one half of the foot. The soft parts slowly sloughed out, with little or no discharge, and left the bones of the meta-tarsus bare. The foot, above the line of the gangrene, became somewhat œdematous.

The femoral artery in the right groin beat much less forcibly than usual. The leg was drawn up a little, and gradually became more so, until it was bent nearly to a right angle at the knee. This appeared *not* to be accidental, and the limb could not be straightened without much pain and considerable difficulty. There was, however, no muscular rigidity; the muscles had indeed lost almost all power. Accidental motions of the leg, as when it was displaced by the carelessness of an attendant, gave great pain in all the tissues. It was difficult, from the age and weakness of the patient, to discover whether any slight power of voluntary motion remained in the extremity. I found the leg always in the same position, excepting that it gradually became more flexed, and she affirmed that she had no command over it, and could not, by the greatest efforts, move it. Her strength gradually declined, and, at the end of the fifth week, she died. Twenty eight hours after death, I proceeded to examine the body.

Eleven years before, it appeared, from the history given to us by the attendants, she had fallen, and wounded her head, and an exfoliation of the upper part of the frontal and parietal bones had taken place. The integuments and the pericranium as well as the bones themselves, were exceedingly thin, in the situation where the shock of the fall had been received. The dura mater adhered very firmly to this portion internally.

The brain was removed. On examining its exterior, I discovered a considerable effusion of serum beneath the arachnoid membrane. About three ounces also flowed from the base of the cranium, and from the spinal canal. The basilar and vertebral arteries were diseased. Their lining membrane was opaque in many portions, the coats were brittle, the artery distended without increased growth of tissue, and cartilaginous and caseous deposits were found beneath the internal coat. This disease extended to several small arteries in the brain, and was particularly evident in those of the Corpus Callosum. The cerebrum was firm, and exhibited, when divided by the scalpel, many bloody points. The ventricles contained much serum. The left hemisphere was, in other respects, every where

healthy. An abscess was discovered in the posterior part of the right corpus striatum, which stretched beneath the tænia to the left thalamus. The surface of the thalamus was softened, broken down, and presented shreds, which floated in the serum contained in the ventricle.

The left lung was very emphysematous: it contained in the superior lobe a cavern formed by the softening of tubercular matter, and exhibited in the lower lobe a bulla of the size of a large apple. The parietes of the right ventricle of the heart were discovered to be extremely thin, little muscular fibre was left. Only a few fasciculi were scattered through adipose substance, and cellular membrane. The parietes of the left ventricle were invaded by a similar degeneration, but not to the same extent. The mitral valve was much thickened, and granular deposits of a somewhat tubercular character were scattered over it, and the semilunar valves of the aorta were somewhat enlarged at their base.

Some spots of deposition occurred beneath the living membrane of the aorta, in its ascending portion, but from the arch onwards it exhibited a continued and unusual state of disease. Plates of bone had been deposited beneath its lining membrane: in some places, they were completely covered by it; but, in others only partially, from its subsequent ulceration. Occasionally, this ulceration had proceeded so far as to divest the plate of bone of its membranes over three fourths of its extent, and it then projected into the cavity of the artery, powerfully impeding the progress of the blood. Among these osseous depositions were interspersed cartilaginous layers, and portions which resembled tubercular secretion. There were also some few abscesses, and in two or three instances organized lymph, which, from its color appeared to have been occasioned by an extravasation of blood beneath the lining membrane. All the small arteries which communicated with this portion of the aorta were similarly diseased. At the first lumbar vertebra the artery was slightly contracted. Here the osseous deposit surrounded the whole of its cavity and prevented its collapse, even under strong pressure. It appeared a strong bony tube, and preserved this character beyond the bifurcation almost to the internal ring.

The disease was traced into the internal iliac, and bony deposits could be felt in all the small arteries of the pelvis. The arteries which escape from the pelvis by the ischiatic notch were all similarly diseased on both sides. Both the gluteal arteries were curiously obstructed. Their coats were firmly ossified: a clot appeared to have been formed in their cavities, from the loss of action and roughness of the internal membrane,

which, presenting obstructions, had accumulated deposits, and at length occasioned a stagnation and clot. Subsequently, this lymph had become organized, and having partaken of the general tendency to osseous deposition, had become a piece of bone filling the cavity of the artery, and adhering to its internal parieties.

The coats of the right femoral artery were much more disorganized than those of the left, but the same disease prevailed in both vessels, and also in the profunda femoris. In the right femoral, however, at the situation where the tendon of the adductor crosses the artery before it enters the popliteal space, the cavity was obliterated, and the artery beneath contained a clot which filled four or five inches of the main trunk and subdivisions, and it was not further traced. The obliteration was occasioned by circumstances similar to those which existed in the aorta. A portion of the thickened lining membrane had been set free by ulceration, or by rupture from some sudden motion of the leg, and, rolling upwards in the cavity of the artery, had at once effectually obstructed it as with a valve, and prevented the progress of the blood. The left femoral was not obstructed.

Some hours had been spent in making this examination, when the lateness of the evening, and some pressing engagements reluctantly compelled me to desist from prosecuting this interesting inspection into the smaller branches, and into the brachial and carotid arteries and their ramifications. There can be little doubt, that many of the smaller arteries would have exhibited specimens of the peculiar methods of obliteration discovered in the gluteal and femoral.

This remarkable instance of disease in the lining membrane of the arteries seems to indicate the source from which even ossific deposits sometimes arise. Many of the peculiar products discovered in the tissue of the arteries seemed to be the immediate consequences of inflammation. Abscesses and lymph are its common terminations. The osseous and cartilaginous layers may therefore be considered, as resulting from morbid actions which ensued in the effused lymph after its organization, and which being connected with the tissue of the artery (which is itself from "*depraved nutrition*" liable to these changes) became the bed of ossific deposits. The peculiar process by which the lining membrane of the artery is separated from the subjacent coats, whether by violence or simply by diseased action, is well described by Mr. Turner,* the Pro-

* On the Spontaneous Obstruction of the Canals of the Larger Arteries. Transactions of the Medico-Chirurgical Society of Edinburgh, vol. iii. part i. p. 105.

fessor of Surgery to the Royal College of Surgeons of Edinburgh; and this case affords an exemplification of the opinions which he has so ably supported. The portions projecting into the interior of the aorta to a certain degree impeded the flow of blood, and threatened to form still greater obstacles.

It becomes of consequence that we should be able to recognize a malady of such importance in its origin, when, as in some of the cases on record, the inflammation is acute, and may be treated in the ordinary way. Subsequently, we can have little hope of arresting the progress of such serious disease existing in a tissue of low vascular organization, and little susceptible, as far as we can judge, of influence from external or internal remedies.

The symptoms in the acute stage must vary as the inflammation is local or general, and even when it affects the general arterial system its history appears to be vague.* After rigors, the pulse becomes quick and hard, and the general symptoms of acute inflammatory action supervene. They are accompanied frequently by slight cough, diffused pain in some portion of the chest or back, and sometimes by continued nausea. The pain afterwards may subside in the part first affected, and acutely affect some distant organ, or a limb in the course of an artery. In this case greater heat is often felt in the part where it exists. In addition, it may be remarked, that, though the symptoms of acute inflammation are present, it cannot be affirmed that any particular viscus is its seat, and the pains suddenly wander about the body chiefly following the trunks of the larger arteries, whose pulsations become at intervals throbbing and violent. In the subsequent stages the pulse suddenly becomes weaker and slower, at other times very feeble and quick. Severe rigors are followed by profuse perspirations. The countenance is pale and extremely anxious, and the mental faculties are often affected. In the course of some particular artery a hardness, a swelling, or a knotty feeling is discovered. The patient experiences the sensation "*that something has given way in the limb.*" The pulse is lost in one or more of the extremities and the part becomes cold, perhaps paralyzed. But ere this period the *consequences* of inflammation have ensued, and the history refers to its second stage.

The symptoms are however unfortunately frequently much less prominent, and the disease declares itself only by its fatal consequences.

* See Mr. Turner's Paper, (Op: Cit) also Dublin Hospital Reports, vol. v. p. 17. Case of Arteritis in the Annual Reports of the Meath Hospital. By Dr. Graves and Dr. Stokes.

In the present case the paralysis of the left side of the body evidently depended on the abscess discovered in the right corpus striatum and thalamus, which first organ is most frequently found diseased in hemiplegia. The paralysis of the right leg, however, depended on the obstruction of the artery, and the imperfect supply of blood to the muscular and nervous tissues.* The necessity of a larger supply of blood to muscle than is necessary for the purposes of nutrition has not, I think, sufficiently attracted the attention of physiologists in recent researches. It may, perhaps, be shewn that this supply has a direct relation to the *mechanical* phenomena developed in muscular action. This is not the place to insist on these opinions; but, whatever result be obtained by more extensive investigations, this case is illustrative of the paralysis depending on a *diminished supply of blood* to muscular fibre.

CASE II.—*Obliteration of the Vena Cava Inferior, and Fungus Hæmatodes of the Kidney.*

The subject of this disease was only seen by the writer during the last week of his life. He had been a man of dissipated habits, had indulged very freely in the use of spirituous liquors. His faculties had been much benumbed by his disease, and no very clear history of its origin and progress could be obtained from him.

He had for some time, long before this period, suffered from severe pain in the lumbar region shooting in the course of the ureters, accompanied also by severe nausea. This pain had, in a great measure, subsided. He had no symptoms of calculus in the bladder, and had passed no gravel. Shortly after the pain had subsided, he observed that his water had become more scanty than usual. He suffered from severe headaches, dizziness, disturbed sleep, and occasional delirium. He observed that his legs began to swell, and his abdomen to increase in size. His strength utterly failed, and he was obliged to remain at his lodgings.

Some time had elapsed ere he applied for medical advice. He was in the extremity of his disease. I found extreme œdema of the lower extremities, and their muscular power was nearly lost. He could with difficulty move either leg, and was therefore lifted from the bed and replaced by his attendants.

The abdomen was large, tense, and on percussion yielded an evident sense of fluctuation. The urine was exceedingly

* Dublin Hospital Reports, vol. v. p. 17. Clinical Reports of the Meath Hospital. By Dr. Graves and Dr. Stokes.

scanty; an ounce of high coloured and very turbid fluid being voided in the day. The powers of the detrusor urinæ had nearly failed, but those of the sphincter remained more vigorous. He had great difficulty in making water, and it was accompanied with much pain. The face was pale, bloated, anxious, and expressive of great mental hebetude. He had frequent wild delirium during the night, but in the day was often collected. The pulse was slow, labouring, but easily compressed. The respiration was not disturbed.

A fatal prognosis was given, but some of his companions who visited him desired that remedies might be tried. Mercury, squill, digitalis, and elaterium were used, with little or no effect. A general torpor seemed to oppress all the abdominal viscera.

On opening the cavity of the abdomen many quarts of serum were removed. A large tumor treble the natural size of the kidney was discovered growing from its texture. Externally it had an irregular lobulated form, and was of a deep red color. On making an incision through the centre of this morbid growth into the structure of the kidney, it was discovered that it sprang from, and was intimately connected with its tissue, into which it graduated by insensible structural changes. Its consistence was spongy and soft, and its color generally resembled that of muscle. Portions however of irregular form and various magnitude, and of a whitish or opaline color were scattered through it. Their texture was somewhat more fibrous, and they were bounded by defined lines, like membranous envelopes. Portions of the more vascular and redder mass were softened into a thick liquid of light red color, and opaque resembling a mixture of blood and pus; and other portions were passing, in various stages, to the same state. This morbid structure extended to the superior extremity of the kidney, graduating as below by insensible shades into the healthy texture of the viscus. An aperture was found near the origin of the pelvis of the kidney, connecting the tumour with the emulgent vein, which, as well as the Vena Cava, above the point where the emulgent vein opens into it, was filled with the softened matter above described. But from this point downwards till after its bifurcation the cavity of the Vena Cava was entirely obliterated by the effusion of lymph, which was organized at the superior part, and passed gradually into coagulated blood in the portion near the origin of the iliac veins. Both the emulgent and the cava above the insertion of the latter were very considerably enlarged. A small quantity of the softened encephaloid tumor was found in the right auricle. The artery was of its natural size, and healthy, as were also

the right kidney, and its vessels. In the liver were several tubercles of various magnitude, from that of a small bean to the size of a pigeon's egg. These, when cut into, were found to consist principally of white cerebriform matter, though interspersed, in some of the larger, with striæ of a fleshy color like that of the diseased kidney. Some of these were manifestly approaching to the stage of softening, and from their centres a small quantity of a puro-sanguineous liquid exuded on pressure with the scalpel. In the superior lobe of the right lung was a small hard cartilaginous body of a greenish grey color. The heart and its valves were healthy.

I am indebted to the politeness of Dr. Charles Henry for this account of the dissection, which I prefer to my own notes of it, which were made from recollection—my original sketch having been mislaid.

The circulation, in this case, appeared to have been chiefly carried on by the inosculation of the veins supplying the rectum and sigmoid flexure, with those which communicated with the intestines situated in the higher regions of the abdomen. Their enlargement was however not so great as might have been expected.

ART. III.—*On Spinal and Spino-ganglial Irritation*. By
W. R. WHATTON, Esq., Surgeon, Manchester.

THE observations contained in the following sheets have been prosecuted with much care and attention during the last ten years. They have reference to a form of Spinal disease, which, from its presenting a very frequent source of long continued suffering to the patient, as well as of much anxiety to the friends of the afflicted individual, deserves the closest investigation of the cultivator of medical science.

The attention of the profession has perhaps not been sufficiently directed to the diseases of the Spine. Mr. Pott, indeed, in his valuable tract on "*Palsy of the lower Extremities*," has very well described caries of the vertebræ, but since his time, little, if any thing, has been added, either to his history of the complaint, or to the method which he has recommended for its treatment. The authority of his name and opinions, indeed, have unfortunately put a stop to inquiry, and those surgeons who practised soon after his time, at once concluded that all other forms of Spinal disease sprung from the same strumous source; hence our diagnosis has been attended with confusion, and a plan of treatment has been introduced in all cases, which has not only proved useless in many, but in some,

even unnecessarily severe and injurious. No person, for instance, in these days, thinks of curing the lateral curvature through the medium of caustic issues, while, on the other hand, caries is but seldom treated without them.

Many preparations are to be seen in different Museums, shewing various degrees of deformity, where the bodies and processes of the vertebræ are free from disease, and have become modified only according to the extent of pressure to which, during the progress of the curvature, they have been subjected. In the engravings accompanying Mr. Shaw's excellent work on "*Distortion*," specimens are given, where the curve has extended so far, as even to occasion death, by its encroachment on the functions of the Spinal Cord, and the thoracic and abdominal viscera; yet it was not pretended that there was any scrofulous affection or disease of the bones.

This able surgeon has been followed, in his views of the nature and treatment of caries, by his editor and relative, Sir James Earle, who has not deemed it necessary to avow any difference of opinion upon the subject. In the writings of Mr. Pott, and Sir James Earle, we perceive nothing to induce us to suppose that they were acquainted with that form of spinal disease, which is of such frequent occurrence in these days, and which bears unequivocal appearances of inflammatory action, followed by the consequences usually attendant on a high degree of nervous irritation.

Mr. Copeland, in 1815, favoured the profession with an excellent dissertation on caries, in which he has enlarged upon Mr. Pott's ideas, as regards both the history and treatment of that complaint. This gentleman thinks, that the confident manner in which Mr. Pott announced his treatment of caries, by caustic issues, has contributed to check our investigation in Spinal disorders, and states, that the cases related by Dr. Jebb, existed before Mr. Pott's tract was written; and that those of Dr. Pierce, in the third volume of the *Medical Observations*, are very valuable, and worthy of attention, they being cured without caustic, and by ankylosis, effected by rest and the efforts of nature. That Mr. Copeland had seen cases of that particular form of diseased Spine, which I am about to treat of, is evident, I think, from his own description; but that he, in some instances at least, mistook them for the commencement or early stage of caries, I submit, with the greatest deference, is equally probable, from the inference he draws from the premises given. "When any of the symptoms," says Mr. Copeland, "which I have enumerated, accompanied perhaps by a slight degree of debility and numbness, or torpor of the lower limbs, lead to a sus-

picion of an incipient complaint of the Spine, the whole column should be very attentively examined; and if there should be the slightest degree of unnatural projection, or even tenderness on pressure, in any one part, there can be little doubt that the seat of the malady is there. In the very early stage of the disease, however, that I am supposing, it is possible that there may be considerable disease, and yet no manifestation of it to the sight or to the touch. So very low is the degree of sensation allotted to bone and ligament, in the healthy state, as I have before explained, and so long is it before this quality is acquired by disease, that the smallest degree of tenderness to the touch, is an evidence of morbid action within. But although the most trifling sensation of pain, on pressure of any part, would lead us to a conclusion, and particularly when the sensation is the same on repeated trials, we have not always this direction to guide us, and under such a case I have frequently detected the disease by the part being more susceptible of the stimulus of heat. A sponge wrung out of hot water and carried down the Spine, will often give a very acute degree of pain, while passing over the part where disease is going on. The effect of this experiment I first discovered by accident: when I had been applying leeches to a diseased spine, the gentleman, who was my patient, complained of great pain, when the sponge came close to the projecting vertebræ; and on reflecting how much more sensible of the power of heat an inflamed part was, I was led to repeat the experiment in every case of diseased Spine which offered to my inspection."

"I have not been able to reduce the result of this experiment to any given rules: sometimes I expected a great degree of pain, and it did not occur; at other times, it took place where I least expected it. But it requires long experience and many trials, to speak with confidence on a subject of such considerable importance, as an early and decisive diagnosis of the disease."

"This, however, may be safely concluded, that although the absence of pain on this application of heat, is not an evidence that there is no disease, the feeling of acute sensation in any one part, is sufficient to mark that part as the seat of the disease. Whatever circumstance, however trifling, leads us to an accurate diagnosis of this formidable complaint, cannot be too much dwelt on, or attended to, at the only period when it is in our power to prevent the deformity, and other serious consequences, which usually are produced by the continuance of the disease."

My own experience leads me to vouch for the accuracy of

Mr. Copeland's description of the symptomatic appearances given in these paragraphs; but they are not, I think, applicable to one and the same form of disease.

In the early stages of caries, as well as of lateral curvature, acute pain on pressure of the spinous processes of the vertebræ is rare, and when any great degree of increased sensation does exist in these parts, during the progress of the former disease, it does not occur until the bodies of the vertebræ are considerably affected, until the curve is formed, or until the processes have partaken, in common with other neighbouring parts, in the consequences of the disorder.

In cases of Spinal Irritation, on the contrary, this symptom is always one of the first and most constant, and it was in such cases, I apprehend, that the application of heat produced the severe uneasiness spoken of by Mr. Copeland. That gentleman constantly made use of this expedient, afterwards, for the detection of the early symptoms in cases of diseased Spine indiscriminately, and hence it followed, "that he was unable to reduce the result to any given rules; and that sometimes he expected a great degree of pain, and it did not occur, while at other times, it took place where he least expected it."

In those diseases commonly termed psoas abscess, also, whether arising from affection of the ligaments of the Spine, or of the intervertebral fibro-cartilages, or from caries of the bodies of the vertebræ themselves, there is scarcely ever any acute pain referable to the spinous processes of the back;—and the symptoms are not unfrequently so very equivocal, that the true nature of the complaint is often overlooked or mistaken.

In many cases of caries, indeed, the patients do not experience sufficient uneasiness, at the time of the setting-in of the complaint, to induce them to notice their situation, and instances have occurred to me, in which the usual symptoms had been so entirely unnoticed, that there was no suspicion of the complaint existing, previous to the actual discovery of the curvature.—Not so, however, in Irritation of the nerves of the Spine.

In the writings of Messrs. Baynton, Wilson, Harrison, Shaw, and Dods, I do not perceive any notice of this affection; and it is not improbable that, as these gentlemen wrote expressly on the lateral curvature, they did not think it necessary to direct their attention to the various diagnostic appearances which characterize Spinal Irritation, or that it had escaped their observation altogether as a separate form of disease, and had, perhaps, in some instances, even been taken for the earlier stages of distortion.

However this may be, it is certain that there does exist a

wide difference between these two forms of disease, each originating in a separate and distinct tissue, assuming a distinct type, and being followed by different sequels.

In cases of Irritation, the most prominent and characteristic symptom is the highly painful sensation produced by pressure on the points of the vertebræ, in that division of the spine where the disease is supposed to reside; *and this symptom is never wanting*. Its occurrence is to be explained, I presume, by the supposition that the irritation has already extended itself along the posterior nervous twigs, supplying the processes and arches of the vertebræ, and the numerous muscles and ligaments attached to them;—and its early appearance is easily understood, when we recollect that these twigs are the first which are given off by the lateral nerves on either side, and arise immediately from the spot implicated in the inflammation. There is another remarkable difference to be noticed with regard to this form of disease of the Spine. While cases of caries occur indifferently in the Spines of either sex, those of Irritation, like lateral curvature, are found chiefly among females. Of several hundred cases, which I have had opportunities of examining, I have not seen more than half a dozen occurring in male patients.

I am not aware that any particular method of education, or any kind of study, or position of the body, predisposes to this complaint: for, I have met with it as frequently in the middle and lower classes as among fashionable life; and among married females who are the mothers of grown up families, as among single ladies; but much more rarely among girls. The youngest patient I have seen affected by it was thirteen years of age, and the oldest, fifty. I have known it occur occasionally during pregnancy; and though it has been productive of excessive uneasiness, and has generally somewhat disturbed the uterine functions, it has usually been removed without any unpleasant consequences either to the mother or the child.

Though instances now and then occur where the disease becomes chronic, in the worst acceptation of the word, yet I have never met with a patient who has died of the complaint. Dr. Brown, of Glasgow, has divided the disease into first—“Those cases in which there is merely a morbid sensibility of a single nerve;” and 2nd—“Those in which there is a more general and constitutional irritability, in which the irritation is apt to affect different parts of the Spine in succession, and to occasion a whole train of singular symptoms;” which last form is, he thinks, strictly confined to females, and the former occasionally met with in male patients.

Mr. Teale has formed his division somewhat different from

that of Dr. Brown. To the first class he assigns the designation of "Irritation of the Spinal Marrow," and under that head includes all the affections of the Spinal System *alone*, from the head to the sacral extremity. To the second division he allots, under the head of "Irritation of the Ganglia of the Sympathetic Nerve," all affections of the Ganglia which he considers "similar to those which have been described as occurring in the spinal marrow."

The division which has appeared to me to be the more preferable, and which is, I think, consistent with the usual characteristic symptoms of the disease, is that which places in the first class, cases of irritation of the *spinal* nerves *simply*, and which do not extend themselves beyond an affection of that organ; and, in the second, those which occur, in the first instance, in the spinal nerves, and which afterwards extend their influence, through the communicating branches, to the *ganglial system*;—the first I have named Spinal, and the second Spino-ganglial Irritation.

SYMPTOMS.—The first case of Spinal Irritation which fell under my observation occurred, I think, in the year 1819, and, at that time, my ideas of the complaint were very confused and obscure. As subsequent cases offered themselves, opportunities were afforded of investigating its symptoms and marking its characters, and I made it my particular business to examine very accurately and attentively the different appearances, with the view of arriving at a more certain conclusion, as to their nature and treatment.

The morbid sensations attendant on the disorder are so various in different instances, and take so wide a range in their kind, and in the degree of their intensity, that it is at times, extremely difficult to explore our way, or to discover any rational means of guiding our judgment.

In slighter cases, the symptoms are mild and intermittent, and the patients are able to attend to their various avocations, without much pain or uneasiness: and it is only when attention has been excited, by inquiry into the nature of their complaint, that they become aware of the extent of the disorder.

Irregular shooting pains in the limbs, and in the integuments and muscles of the chest and abdomen; occasional headach and loss of appetite; tremblings, and obscure uneasiness over the shoulders and down the back; with a general debility and disinclination to exertion or exercise, are the signs by which this form of the disease has usually manifested itself.

In the more urgent cases, the uneasiness becomes fixed and

constant; the tremors are alarming, and the severe darting and lancinating pains over the chest and abdomen, and through the limbs, are harassing and intolerable. Sometimes the cases had become protracted in their duration, and the patients had suffered for months under the most aggravated forms of the complaint, without any suspicion having been excited as to its real nature and origin;—and, in other instances, mistaken views of the disease had subjected them to various kinds of treatment, totally unnecessary, and, generally, quite inadequate to the removal of the complaint. In all these cases, however, there was one symptom, which, as far as my own experience has gone, has never been absent;—and that is a tenderness, upon pressure, in some part or parts of the spinal column.

In the slight cases, this pain is not so urgent as to cause much distress, and the pressure can be borne without any great suffering or disturbance; in others, the tenderness and excitement are so great, that, in running the finger along the spine, the instant the irritable spot is arrived at, the patient starts from under the pressure, and a degree of anguish is occasioned, so exquisite and excruciating, as frequently to produce the most violent spasms, which either go off gradually in repeated faintings, or subside into periodical and less painful dartings along the nerves running from the part which has been subjected to examination.

The darting pains correspond, in a remarkable manner, with the origin of the irritated nerves, and are very frequently found to strike through the chest, and to produce an acute smarting over the ribs and sternum, and throughout the neighbouring parts, where those nerves distribute their ramifications, and supply energy and sensation.

Every part of the Spinal Cord is subject to the disease: sometimes it is observed to fix itself upon one portion, and sometimes on another; frequently it is found existing in different portions, and occasionally over the whole column.

When the upper cervical nerves are affected by the irritation, the seat of the pain is most usually found in the suboccipital and lateral region of the cranium; the muscles of the face and the integuments of the neck are also affected; and there is a considerable degree of stiffness and inability to move the head and jaws. I have now and then met with a case where the pain has extended from the back part of the head, in a direct line over the skull, to the forehead, indicating a diseased state of the nerves supplying the occipital and frontalis muscles. When the affection fixes itself in the lower cervical portion of the Spine, the disease is generally announced by severe darting pains and cramps in the course of the axillary and brachial

nerves, and along the upper and fore arm, and by burning sensations, and aching of the muscles enveloping the shoulder joint, and upper and lateral parts of the chest. The severity of the pain is sometimes observed to fall upon the fore parts of the thorax, and to extend itself to the breasts; the glands of which become very painful to the touch, and are sometimes indurated and enlarged. This painful state of the glands of the breasts occurs as frequently in married females as in single women, and I have not perceived any thing to indicate a suspicion that one class of females is more liable to its attacks than another.

In these affections of the upper extremities and chest, there is usually a preternatural degree of lassitude and debility, frequent sighing, tremblings, and nervous twitchings; and sometimes also the wrists and hands are benumbed, and do not admit of their usual facility of direction. When the first division of the dorsal nerves forms the seat of the malady, we have the same painful shootings along the course of the anterior branches supplying the intercostal muscles, and edges of the ribs and sternum, and the upper parts of the epigastrium; and great soreness and aching in the ramifications of the posterior branches which go to the integuments and muscles behind the chest.

In the lower division, there is great pain around the abdomen and over the stomach; a feeling of soreness and smarting along the ribs; tightness around the chest, with frequently a considerable degree of loss of sensation and energy in the intercostal muscles;—these latter symptoms, with consequent dyspnoea, and a burning sensation over the sternum, and at the point of the xyphoid cartilage are, I think, never absent in well-marked cases of irritation of the dorsal nerves.

Atony of the abdominal muscles, causing much uneasiness and difficulty in expelling the contents of the bladder and rectum, is a constant symptom; and irregular pains, and sometimes partial paralysis in the integuments covering the lateral parts of the belly and thighs.

In the lumbar nerves, we have severe aching in the region of the loins, soreness over the skin and muscles of the genital organs and upper part of the thighs; painful and spasmodic dartings along the crural nerves, and down to the ancles and feet, with trembling, unsteadiness, and loss of power, similar to what is observed in the upper extremities. And in affections of the sacral nerves, the sacro-spinales and glutei muscles are found to partake in the disease, and the parts in the neighbourhood of the perineum.

In some acute cases of Irritation of the roots of the Spinal Nerves, or in those that have become chronic, the disease is very frequently seen to extend itself through the medium of the communicating branches, to the ganglial system; and in addition, therefore, to those symptoms, which have just been enumerated, we have others, consisting chiefly of irregular and spasmodic action of the involuntary muscles, and of the perverted functions of those organs and viscera, which derive their nervous energy from the ganglia to which the irritation has been continued.

When the disease has been carried from the spinal nerves of the upper part of the neck, by the correspondent branches of communication, to the cervical ganglia, the chief additional symptoms are violent and stabbing headaches, painful throbbings of the carotid and temporal arteries, and a fixed and heavy pain at the base of the skull, sometimes extending itself by the mastoid process, under the angle of the jaws, to the fore part of the neck.

When the middle half and lower portion of these nerves are in a state of irritation, or when the disease extends itself throughout the whole of the cervical spine, as is sometimes the case, the inflammatory excitement is communicated in like manner to the cervical ganglia, and thence, downwards to the cardiac nerves and cardiac plexus.

From this division of the ganglial system are furnished nervous branches going to the heart and lungs, to the aorta and the large blood vessels of the parts situated within the thorax, and others which supply the involuntary muscles of these parts with their nervous energy. The heart and great blood vessels are affected by irregular and spasmodic action; and are subject to various morbid and highly painful sensations; there is frequently severe aching and distress in the act of inflating the lungs, and a remarkable sensation of paralytic depression in the attempt to expel the air. Any of these symptoms readily occur when the patient has been alarmed by a sudden or unexpected occurrence, or when she has been hurried by any little increase of exercise or mental application.

As the disease advances, these symptoms are more frequent, more strongly marked, and are less easily removed. The intervals of freedom from the complaint gradually contract, until at last the patient becomes so irritable, and suffers such severe and continual pain, that her spirits are worn down, and she becomes weary of existence.

Should the disease have arisen in the dorsal region of the spine, the same affection extends itself to that division of the ganglial system which gives off nerves to the organs and viscera

of the abdomen. The solar plexus wholly, the semilunar ganglia singly, or the splanchnic nerves and thoracic ganglia, appear in these cases to be affected by the malady: all those parts, indeed, of the abdominal cavity in succession, which receive energy from the solar plexus, or its secondary ganglia, are more or less subjected to the irritation. The diaphragm, stomach, liver and spleen, and the large and small intestines, and kidneys, as their appropriate ganglia are affected, become, in their turn, or together, liable to the encroachments of the disease.

If the stomachic plexus be the seat of the disease, we have painful depression at the region of the præcordia, especially after taking food; tenderness on pressing the stomach; difficult and incomplete digestion, attended with flatulence and preternatural distention; a feeling of anxiety about the heart, periodical and violent palpitations, and vertigo. These impressions being carried, through the medium of the cerebro-spinal connections, to the brain, are frequently productive of sudden and distressing terrors and alarms, and the patients are occasionally tortured by the fear of apoplexy or some other fatal disease, of which, however, there is no real or perceptible indication.

The secretions of the stomach are greatly perverted; the gastric fluid becomes sour and unfit for the perfect solution of food; and whenever an attempt is made by the patient to extricate the nauseous air, which is plentifully formed, large quantities of acid watery fluid are brought up, and temporary relief is obtained from the removal of the distention and acrimony.

The biliary secretion in all probability too undergoes similar changes; and although the liver, perhaps, may not be endowed with a degree of sensation equal to that of the other viscera of the abdomen, yet severe pain in that organ is occasionally detected accompanying affections of the secondary ganglia of the central plexus.

The large and small intestines, when the mesenteric plexuses form the seat of the disease, are visited with severe twistings, and painful distentions, most frequently extending over the region of the colon, and producing intolerable anguish and distress. The sensibility of these organs is also very often perverted, the filaments sent off by these plexuses to the intestines being exceedingly numerous and highly susceptible.

In an extension of the disease from the lumbar nerves to the lower division of the ganglial system, we have painful affections of the kidneys and uterus. The menstrual discharges are commonly interrupted, and generally profuse, especially when the complaint has been of some duration.

TREATMENT.—In common cases of Irritation of the Spinal Nerves alone, the treatment is very simple. Abstraction of blood from the part where the tenderness has been discovered, by the application of leeches or cupping, will in general afford relief; and this may be repeated, at intervals of three or four days, if the pains should return, as often as may be judged necessary. When the more urgent uneasiness has subsided, a small blister on each side of the affected vertebræ, or a single larger one, above or below them, will be found very useful; and these also should be repeated, from time to time, as the nature and duration of the disease may require. It is a common practice to apply the blisters to the spine very soon after the leech bites have ceased bleeding; and from this simple circumstance has arisen much difficulty and perplexity in the management of the patient. It is easy to perceive that, while inflammatory affection of the nervous system yet remains, or even after it has been partly subdued by the abstraction of blood, any severely irritating application will but have the effect, by causing a determination of blood to the seat of the malady, of increasing the evil. It is not advisable, therefore, to resort to blisters, until, by repeated bleedings, the urgency, at least, of the pain has been entirely checked; and, even then, it is always better to apply the blisters in the neighbourhood, rather than over the painful vertebræ.

In recent and slight cases, a single bleeding, or the application of a blister, will frequently succeed in effectually removing the disease; and I have known several instances where the complaint had been misunderstood, and had existed many months, and even years, which have given way without difficulty, when the curative means were applied to the true seat of the irritation, instead of the nervous filaments, which are the seat only of the distant symptoms. Some simple aperient medicine may be given, with a view of restoring the proper functions of the stomach and bowels, if it should be required, but more than this does not appear necessary; the depletion and blisters almost always proving sufficient for the removal of the irritation, and the restoration of the healthy functions following as a matter of course, as soon as the part has been properly relieved.

In the Spino-ganglial Irritation the same means are to be had recourse to, and it is necessary to attend, during the progress of the cure, to the state of the irregular secretions. In some cases, where the patient suffers from severe cardialgia, and is troubled with acid and flatulent eructations, I have generally been in the habit of prescribing the carbonate of soda or potass pretty freely, along with some simple bitter infusion; and in others, where restlessness and feverish excite-

ment are urgent, they have been allayed by the use of the liquor acetatis ammoniæ, and small doses of opium and the submuriate of mercury.

Where the fixed pains have entirely subsided, but where there yet remains a sufficient degree of uneasiness to disturb the comfort of the patient, I have had recourse, as advised by Mr. Teale, to the use of some stimulant embrocation, which is directed to be rubbed over the spine occasionally; such as the liniment: subcarb: ammoniæ, or camphorated oil with spirit of turpentine. These applications keeping up a degree of stimulus or moderate counter-irritation, have been productive of very good effects. The flesh brush, mustard poultice, or warm fomentation, will likewise answer very well.

Any debility consequent on the necessary depletion will soon be remedied by a gradual return to improved diet; and if any loss of appetite remain, the sulphate of quinine, or some of the preparations of iron may be useful; except, however, in chronic cases, or in some debilitated constitutions, these will seldom be required, and unless due attention have previously been directed to the state of the spine, they are inefficient and useless.

CASES.—Miss G. ætat. twenty-four, November 19, 1828, of a full habit, and very stout, has frequent severe pains through the upper extremities, under the left breast, and down the sternum, attended with spasmodic shootings along the ribs. There is considerable tightness around the margin of the chest, frequent difficulty of breathing, and occasional fainting. She also directs my attention to some very troublesome pains and uneasy sensations, round the hips and down the thighs and legs. Her bowels have for some time been in a confined state. Menstrual discharge uninterrupted. Leucorrhœa. Pulse 100: tongue clean and white.

On examining the spinal column I find an exquisite tenderness at the sixth and seventh cervical, and first, second, third, and ninth and tenth dorsal vertebræ; severe pains shooting through the costal nerves to the sternum, when the processes are subjected to pressure.

Twelve leeches were ordered to be applied, and she took six grains of the *Pilulæ Hydrargyri* at bed-time, followed by a smart purging draught the following morning.

20th.—Had been freely purged, and was rather easier: pulse 90. To take a saline draught in a state of effervescence, every four hours.

21st.—Pain under the breast extends to the arm pit; and the shootings along the arms are still severe. Apply six more leeches, and continue the medicine.

22nd.—Much easier this morning. Pain under the breast relieved. Bowels being confined, to repeat the aperient draught; and to apply a blister between the scapulæ.

23rd.—Bowels well opened; and is greatly relieved. Pains in the limbs nearly gone; and sleeps well: pulse 80.

25th.—Continues to amend.

28th.—Better, and is able to go out in a carriage. To have another blister.

30th.—Pains in the limbs and chest quite gone, and the spine bears pressure without pain. Left Manchester.

December 10th.—I have a good account of this lady, and she considers herself quite well.

Miss H., residing in the county of Nottingham, a single lady, about twenty five years of age, of a stout make, and dark complexion, has suffered much from continual jarring pains in the chest and limbs, great languor and weakness, with occasional sickness and flatulence, and oppression over the stomach, since the autumn of 1820. She has undergone various kinds of treatment under the care of several medical Practitioners without any decided amendment, the complaint being at one time considered an affection of the stomach, and, at others, of the liver. She continued in this state, with short intervals of relief, until the beginning of the year 1826, when, in the month of February, her attention was drawn to the state of the spine. At this time she was getting gradually worse, the pains in the chest and stomach increased, attended with frequent faintings and hysterical attacks, and much sickness; and her legs and arms became very painful. She was sent from home in the months of February and April, with the hope that change of air would afford benefit, but returned without much alteration, except that the lower part of her back had also participated in the disease, and that her former symptoms were, if any thing, worse than before.

In April she again left home for three weeks for change of air;—“At this time the lower part of my back was very painful, severe pains in my stomach, attended with flatulency, frequent faintings, and hysterical, with occasional shiverings; legs and feet cold and benumbed, sleepless nights, and obliged constantly to recline on the sofa. The *constant* sickness now set in, and every thing I took returned almost immediately. My chest and stomach so severely painful, with a sort of tightness, which so affected my breathing, that I could scarce bear my clothes to touch my body, and was frequently very faint for a considerable time, without actually fainting away.”

On the twenty sixth of May she came to Manchester, and I saw her the following day. On examining the spine, I found the two lower cervical, and five upper dorsal, and the first three lumbar processes in a very painful and tender state. The pressure upon the dorsal vertebræ being distinctly and severely felt at the sternum, and along the margin of the chest.

She has severe shooting pains around the shoulders, and down the arms, tightness over the chest, with dyspnœa, which seizes her on the least exertion, and continues for half an hour at each time, or even more. Fluttering and palpitation at the heart occur frequently in the day, and she is troubled with heart-burn, and severe griping pains in the abdomen. She is obliged to stop suddenly in the course

of walking about the house, from the heavy oppression and tightness at the præcordia. Distention and flatulency, with the ejection of quantities of acid bitter fluid, when the air is disengaged.

Ten leeches were applied to the spine, and she was directed to make use of an aperient mixture occasionally, as might be required.

28th.—Considerable relief was experienced from the bleeding, and the mixture had acted freely on her bowels. To take an antacid mixture when the heart-burn is troublesome, and to apply six more leeches next day.

30th.—The whole of the symptoms much relieved. Spasmodic shootings less troublesome, and the tightness and difficulty of breathing much less severe. Stomach better, and can retain simple food pretty well. She finds weak madeira and water agree best after eating. The pains along the spine being much lessened, she was directed to apply a blister over the dorsal vertebræ.

June 1st.—Improved. The blister to be repeated higher up in the back, as soon as the present one should be sufficiently healed.

5th.—Still better. Palpitations have occurred occasionally, with the usual flatulence at the stomach.

15th.—She has improved gradually since the application of the second blister. The flatulence occurs only after a meal. Tenderness on pressure of the dorsal vertebræ still perceptible. Six leeches to be applied, and to have another blister.

July 1st.—She has not experienced any pain in the limbs or chest since the application of the last blister, and now considers herself equal to moderate exercise. The flatulence and pain at the stomach continuing occasionally; she takes a cordial absorbent mixture with advantage.

This lady continued to follow up this plan of treatment at intervals during the autumn, and left Manchester early in the following spring quite recovered. On the twenty sixth of October, 1828, she says “I am now, with care, quite well; I sleep well, my appetite is good, and I have only occasionally a slight return of the old pain, though I feel the effect of any over exertion; even then the pain does not continue many hours. I can walk without feeling much fatigue, and I still recline sometimes on the sofa; though I can sit up for four or six hours together very comfortably.”

November 7th, 1830.—I have seen this lady to day, who is on a visit in my neighbourhood, and she declares her health to be in every respect perfect.

The following case, which was drawn up at my request by the lady herself who was the subject of it, I consider so very interesting, so truly accurate in every particular, and so admirably described, both as regards the symptoms and treatment, that I shall give it without any addition of my own; she is a married lady, of the age of forty seven, and has a family of two daughters, both grown up; she resides about two miles from Manchester, and, among an extensive circle of friends, her case is well known.

DEAR SIR,—I have stated a description of my complaint, and the mode of treatment adopted for some years, to the best of my recollection. Should you wish for any further information, I shall be happy if you will call upon me: perhaps in speaking with you upon the subject, my memory might be refreshed, and I might describe my feelings more accurately.

You are aware that for some time previous to the year 1822, I had been much troubled with headache and sickness. Bile was at first considered to be the occasion of it, and it was thought that I suffered from a liver complaint. Early in 1824, the pain in the head, and sickness, having become more frequent than usual, I was directed to observe great care in my diet, not to use at the same time any variety of food, and to take only one glass of sherry after dinner. Finding but little relief from this plan, I went to Cheltenham, having previously received benefit from the waters, and the same medical gentleman attended me as formerly; but he found my symptoms had changed, and now considered the stomach in fault. The waters had little effect upon me, my bowels requiring the aid of other medicines. I lost strength and flesh, without the least amendment in the pain in the head, and returned home worse than when I left.

I persevered in the mode of living I had adopted, and observed the utmost care; plain meat with salt only, and bread, substituting weak brandy and water for the sherry; this plan I observed for more than two years, and, notwithstanding, the acidity in the stomach increased: in a few minutes after I had taken food, it returned in small quantities perfectly acid, and continued to do so as long as any remained. Medicine was of temporary service only. My sleep was broken, in consequence of the whole side upon which I lay becoming benumbed, and, however frequently I changed my position, this was the case.

I had a great deal of pain in the small bone below the chest,* for which, and for the sickness, in January, 1825, a blister was applied. At this period I gradually became worse: at times my stomach would scarcely bear any food; and occasionally a difficulty of breathing annoyed me, with great inward weakness. On Dr. —— being consulted, a change of medicine was made, the blister upon the pit of the stomach continued, and nourishment conveyed by injections, all of which lessened the sickness, and the pain in the head became less frequent. But great debility, palpitations, a constant pain in the chest and left side, increasing difficulty of breathing, and weakness, with some hoarseness, succeeded the sickness and the pain in the head.

This treatment was continued, and though the stomach was relieved, to judge from my feelings, I became worse. It was painful to lie on my right side from a sensation of dragging on my left. I could seldom procure sleep from the strong palpitations of my heart; my voice daily became weaker, until it was too much exertion for

* The Xiphoid Cartilage.

me to hold a conversation, the least speaking being attended with pain in the chest and side.

In May I was advised to go to Beaumaris. The change of air was of service: I gained some little strength, but continued all the summer very variable. In October I returned; the winter brought on the difficulty of breathing and loss of voice, with my other sensations, and I could scarcely lie down, or turn in bed, from the pain in the small bone, which I always compared to a bad crush. I received benefit, I thought, from an ointment which was applied to the side and chest, causing an eruption.*

In the Spring of 1826, I again rallied, and through the Summer somewhat improved. As I gained strength, however, and my other symptoms decreased, the pain in my head, and sickness returned; my stomach was, all this time, considered the seat of my disease. I had not been able to use any exercise from the commencement of my indisposition, and continued better or worse until April, 1827, when I apprehended another relapse.

I now suffered more than usual from my head and stomach, being confined to bed three or four days at a time: the light was painful to me, and it was seldom that I could bear to hear any one speak; one side of my head was generally affected at once, drawing a line down my nose and teeth, all of which, on the side where the head ached, were troublesome, and the eyeballs suffered from acute pain. In two or sometimes three days the pain entirely left that side of the head, and fixed itself in the other;—on slight attacks, only one side was affected, in severe ones, both;—my eyes feeling all the time as if I were straining them by intense looking at some object; there was also a great heat and dryness of the head. Medicine was of but little use at this time, except for the purpose of correcting the acid at the stomach.

One day towards the end of May, leaning back rather suddenly in my chair, I felt as if a knife had been run into my back, in the direction of the chest bone, where I had suffered so much pain. Upon having my back examined, tenderness was found in several of the bones;—in about an hour after it had been examined, I became sick, from the extreme pain in the bone of the chest, and could not, for two or three nights, lie down or turn in bed without suffering.

Leeches were applied, which, in a few days gave relief. In a week, I again applied them, and continued to do so for some months, every fortnight, with occasionally a blister, according to my feelings, and the urgency of the symptoms, with success;—I gained strength after each application, and the pain in my head abated. My bowels, from requiring very strong aperient medicine, became very easy to affect; my stomach stronger, and able to bear a little variety of food. I have not applied the leeches regularly since last December, but find they are occasionally requisite. I can now walk two miles with ease, and have even ventured more. I am still troubled, now and then,

* A Liniment composed of Tartrate of Antimony.

with attacks in the head and stomach, but they seldom oblige me to keep my bed, and only last two or three days;—between the times I enjoy the most perfect health, sleep soundly, appetite good, spirits light. I have gained flesh, my complexion is improved; indeed I scarcely know myself, and am the wonder of all my friends. I eat, of plain food, whatever I meet with; my beverage is water. At times I feel a slight burning pain in my back, which, if not relieved by rest, renders leeches requisite; when I omit them, I suffer more from my head and stomach; upon applying the leeches to my back, I always feel them at my chest.

My back had been examined previously to the treatment which you directed, and I had often felt it myself; but the tenderness which was then found was thought of no consequence, and it was not supposed possible the disease was seated there.

I now consider my health perfectly established. I fear you will not find this description satisfactory, but I shall be very happy to answer any questions you may wish to ask, either personally or in writing.

I remain, my Dear Sir,

Your's very sincerely,

November 8th, 1828.

November 10th, 1830.—I have seen this lady within these few days. She is in excellent health.

ART. IV.—*A Sketch of the State of Medicine, and of Medical Schools and Institutions, in the United States of America, with some Statistical Observations.* By JAMES BLACK, M.D., Member of the Royal College of Physicians, London. Bolton.

(Continued from Page 219.)

THE Institutions subsidiary to the Medical Schools in New York, are the City Hospital, the Almshouse Hospital, and Lunatic Asylum, two Eye Institutions, a Dispensary, and Fever Hospital. The first of these is situate in the centre of the town, in Broadway,—commands from the balcony round the cupola an extensive prospect over the city, and receives only acute cases and accidents. It contained last spring two hundred patients, and is attended by four physicians and as many surgeons; one of each denomination officiating quarterly. There are also two house-physicians and two house-surgeons, who are each six months on duty: and no gratuity is allowed to any medical officer, but to the apothecary, who has a salary of four hundred dollars a year. The interior seemed very clean and in good order, having an ample extent of carpeting

on the landings and stair cases. It contains a valuable medical library of three thousand volumes, which is open to all, on paying the yearly subscription; and students of medicine pay a yearly fee of ten dollars, or six in winter and four in summer, for permission to attend the practice of the house. The wards are heated by hot air forced in from above, through valves regulated on the new principle; and though the temperature is kept all winter at 65 Fahrenheit, and appearing to me to be too high a range, yet I was informed, since the wards had been kept so hot, there has been less erysipelas, and accidents heal better than formerly. The colored patients are always kept separate from the white. The surgical operations are not above three in a month, and three cases of lithotomy on an average occur in six months. Calculous diseases are, however, rare in the States, only exhibiting any frequency in Kentucky; which medical men in the country attribute to the calcareous and argillaceous strata, the former of which is rarer to the eastward. Notwithstanding the facilities this establishment might afford for medical instruction, there is no morbid museum, no meteorological register is kept, and no clinical lectures are given. Post mortem inspection is also very rare—the prejudices of the Governors, as well as of the friends of the deceased, being much against it. Respectable patients are admitted by paying three to five dollars per week, for board, lodging, and medical attendance; which custom is prevalent in many of the hospitals in America. The number admitted of pay-patients, and seamen of the United States Navy, for whom the government pays, were, last year, 1049, and of paupers admitted 588, making in all 1637. The rate of deaths to the admissions is 1 to 9.8; and the mortality from fever is 1 in 10.8 of the admissions, of which patients 1 in 2.5 are Irish. The mortality from pneumonia is as high as 1 to 4. Dr. Stevens, an accomplished surgeon of the hospital, treats his fractures on Amesbury's plan, and finds the long splint of Boyer not so much to his mind. Buboes are opened by the lancet, and mercury continues to be given in syphilis. Surgical patients bear very little reduction, and their systems often require to be supported by wine, porter, and bark. The Alms-house is situate about a mile out of town, on an eminence having a full view of the east river and the opposite shores of Long Island, all richly wooded and cultivated, with the villas of the richer citizens scattered around. The hospital attached contained last spring about one hundred and twenty patients, but in winter the number is much increased. Bleeding is here practised in all stages of ague, buboes are blistered, and fractures are treated on Amesbury's plan. The house physician

and surgeon each pay one hundred dollars per annum to the stipendiary medical superintendent, (for their charge under him of the patients,) receiving board and lodging. This is a good field to finish their studies, having plenty of morbid inspection.*

The Lunatic Asylum for the paupers, which is in the same building, is conducted on as comfortable and commendable a system as can be expected; but the asylum for the insane at Blooming Dale, about seven miles from the city, is an institution of a most superb and well arranged construction. It possesses all the advantages of a most delightful and rural situation, surrounded by gardens, walks, and shrubberies; all stocked with the best of vegetables and fruit, and having an ample conservatory of the choicest exotics; the whole surrounded by plantations and natural wood of elms, beech, chestnut, and acacias, and containing in all eighty acres. The upper stories of the building command a most extensive and a sublime view of the Hudson and its lofty mural banks for upwards of twenty miles. The whole grounds were purchased by the state, they being previously a neglected botanical garden; and the State continues an annual grant of ten thousand dollars for forty-one years, for the purpose of erecting more buildings, and other improvements. The number of patients were seventy, none of whom were violent but one, who appeared to have much injured himself, the mild system, or moral treatment which is here adopted, having been carried a little too far, perhaps, in this instance. The superintendent is one of the Friends, who, of all sects seem most qualified for assuaging the madness, or reforming the criminal propensities of their fellow creatures. The success of the moral treatment is much boasted of by all attached to the institution; but the report of last year gives 1 death in 10.8 of admissions. There are few or no paupers admitted, and the rate of board is according to the accommodation, which on the whole is both neat, rich, and comfortable. A particular account of this asylum, and the treatment by the physician, is about to meet the eyes of the public.

The City Dispensary registers about ten thousand patients yearly on the books, and each of the Eye Infirmaries about one thousand patients. Both these institutions are fairly supported by the benevolence of the public; but diseases of the

* When they wish to supply themselves or their friends with a brain and cranium, and to deceive the relatives of the deceased, they extract the whole head out of the skin and integuments, and afterwards stuff them up to a natural resemblance.

eyes are not so frequent as they are in our towns and cities: whether the difference is owing to the drier atmosphere, or to the smaller quantity of coal smoke, it is perhaps not easy to determine. The only instances which I saw of ophthalmia being prevalent, were among the children at the alms-house, among whom the purulent species was very rife, and seemed to be kept up among fifty of them, by not classifying the fresh from the convalescent cases.

The number of interments at New York, in 1829, by the report of the year, were 5094; which gives 1 in 37.83 of the whole population, as now calculated. Of this amount of deaths, 1 in 5.8 were from consumption; 1 in 27 from scarlatina; 1 in 12 from other fevers; 1 in 14 were still-born;* and 2371 were under five years of age.†

No corpses are now permitted to be buried in the city church-yards since the last severe visitation of the yellow fever. They are all taken to the burying grounds attached to each church without the limits of the city, which occasions an increased labour and consumption of time to the several clergymen.

It is upwards of five years since the epidemic fever visited the city, and it yet remains uncertain how it originated. To the Malarist there is no want of presumptive foci for its origin, in the extensive piles of wooden wharfs surrounding three sides of the city—all built originally of fresh wood from the forest, and being continually subject to the flux and reflux of the tides, of small elevation throughout their separated timbers. These projecting wharfs leave open docks between them, which being almost stagnant, from their enclosed and sheltered nature, with the whole filth and open drainage of the city pouring into them, are sufficient, with the hot beams of a July sun, to elicit the very effluvia in question. While this immense mass was undergoing its succulent decomposition, fatal fevers were frequent in their recurrence; but since this decomposition is getting exhausted by time, and the ligneous fibre is only

* The relative rate of mortality in London and its Liberties, are 1 still born to 24 of the whole deaths, and 1 to 4.1 of consumption.

† As the annual report of the Interments only embraces those interred in the precincts of the Corporation, it cannot give an exact account of all who die in the City, or of the fatal diseases throughout the year; as several die in it and are carried to be laid with their fathers at a distance; and others betake themselves home to different parts of the country on the approach of serious or long confinement, or apprehended death. Still the countervailing importation of corpses brought from a distance for interment in their family vaults, and others hastening home to the city to die in the bosom of their families or friends, may perhaps nearly balance the exported victims of mortality.

subject to attrition and rottenness, the liability to these malarious visitations is becoming less, and, in a few years more, may be a nullity. The extension of the wharfs, however, and the want of sewers in the city, will serve, in particular seasons, to engender malaria capable of originating slight epidemics, if some preventive economy on this subject be not instituted.

To the gradual exhaustion of the sappy decomposition of timber, may be attributed the increased healthiness of some other harbours in America, which were formerly perfect Key Wests, or Sierra Leones. The improved state of Norfolk, in this respect is, without doubt, owing to the wharf timbers losing their vegetable juices, and then being filled up interiorly with earth and gravel; as well as to the under stories of dwelling-houses and stores, which were built on piles, and open to the waters below, being now filled up with gravel and clay, and thereby made inaccessible to the foul influxes of the sluggish tides.

PHILADELPHIA.

The first medical lectures in this city, were given in 1762, by Dr. Shippen, a native of the place, and a graduate of Europe. These lectures were on anatomy and midwifery, to a class of ten students, and were the first delivered in America, with the exception of those given by Dr. Hunter, at Newport, in 1756, as above-mentioned. In 1765, a Dr. Morgan returned from graduation in this country, and lectured on the Institutes of Medicine; and these two were the only professors in this institution, until three years afterwards, when a Dr. Kuhn was elected professor of botany, and Dr. Rush, professor of chemistry. This first medical school in the American colonies, was soon after legally confirmed and established, by the authority of the Trustees of the college of Philadelphia, (which was founded in 1755,) while Dr. Franklin was president. The revolutionary war considerably retarded the progress of science throughout America, and the growth of this school, which has since become so eminent. The college of physicians of Philadelphia was established in 1787, and a good deal of illiberal competition and discord took place between the medical college and another school under the university, until some important changes obtained in 1791, by which all differences were conciliated; and then Dr. Rush was appointed professor of the institutes and practice of medicine, and of clinical medicine. Since this period the medical school has gone on in a progressive course of improvement, and an increase of students—keeping the lead of all the other schools in the Union. Among many respectable teachers, it has reason to boast of Rush, Barton, Wistar, Physick, Dorsey, Chapman,

Hare, Gibson, and Horner, as being its former or present professors.

At the commencement, in July, 1771, the degree of M.D. was conferred on four candidates, which were the first degrees in medicine granted in America. The number of students have since been reckoned as high, in some years, as 500: but during the last season, 1829-30, they were only about 400; and these are reckoned to spend, during the four months of the lectures, not less than 160,000 dollars in the city of Philadelphia.

The present faculty of the college are, Dr. Horner, professor of anatomy; Dr. Coxe, of materia medica and pharmacy; Dr. Chapman, of the theory and practice of medicine; Dr. James, of midwifery; Dr. Hare, of chemistry; and Dr. Gibson, professor of surgery—the majority of whom are well known to the scientific and reading public of this country, as the respectable authors of several inventions in science, and of works and papers on chemical and medical subjects.

Dr. Horner, who was for some years an adjunct professor of anatomy, now fills that chair in a very eminent and most industrious manner. The foundation of the Anatomical Museum, under his immediate care and proprietary, was laid by the late Dr. Wistar, the Mæcenas of his time in Philadelphia, from whose heirs, the collection, chiefly consisting of dried preparations, was purchased. Dr. Horner has since enriched the museum by a collection, not so remarkable for the multitude of specimens, as for the rarity of many, and the neat and scientific manner in which they are prepared and arranged by Dr. H. himself, who spares no personal labour or manipulation to supply his collection.

Among the more recent preparations by Dr. H., were some remarkably fine injections of the vascular fabric of the bladder and kidneys, and of the vessels of the theca vertebralis and medulla—the leading artery of which was displayed in all its beautifully natural tortuosity. There was a late contribution from Carolina of an aquatic salamander, which was two feet long, and laid open to shew its fleecy lung in relation to its outward branchiæ. Its long testicle was like an epididymis, and the liver was dark and very long. I believe it has been doubted by naturalists, whether the branchiæ in these creatures are permanent, or only temporary organs, as in the tadpole; but this specimen in Dr. H.'s possession, appeared a perfect and an adult animal. There is one specimen of six lumbar vertebræ of the human subject, but whether of an Indian, African, or European family, there was no notice. Connected with craniology, there is also a very numerous col-

lection of crania of all nations, among which some of the ancient Peruvians were remarkably flattened on the frontal and coronal aspects. The museum, upon the whole, is extremely creditable to the anatomical chair, and promises a rapidly increasing value and repute, through the indefatigable and scientific labours of Dr. Horner, who is about forty years of age, and a gentleman of much industry of habit and activity of character.

The Anatomical Theatre may contain about 600 of an audience, and is well lighted; and the dissecting rooms at the top of the building are well adapted for the purpose—having plenty of water, waste pipes, and a tunnel descending to the sewers under ground for carrying away the debris of the rooms. Of the 400 students at this school last winter, 150 dissected; and the supply of subjects is fair, and much cheaper than they are at New York, being at most five dollars a-piece. The chemical lecture room is ample, having the whole apparatus belonging to the rooms arranged in glass and other cases, in a gallery over the professor's table, and opposite to the students, who have thus an opportunity of seeing any apparatus that may be referred to during the lecture. There is also a small accommodation gallery on one side, for ladies, strangers, and non-professional auditors. Dr. Hare, the professor, though not bred to the medical profession, is well known to the chemical world, from his various papers in *Silliman's Journal*, and for his ingenious arrangement of the galvanic apparatus. He is a great mechanician, and is chiefly his own operative in making and preparing his apparatus.

The university is not at present an imposing building, consisting only of two detached square brick erections, which are newly built, and intended to be covered with cement. The one building belongs to the medical and the other to the literary or academical faculty; and they are both intended to be connected by a centre building, to contain a public hall, offices, and rooms for the meetings of societies.

There is also located at Philadelphia the medical school of Jefferson College, which is situated at Canonsburg, in the same State. This faculty grants degrees in medicine in the same manner, and by the same legislative authority, as the university; but I could not ascertain what number of students frequent this detached branch of the college. The medical school was only instituted in 1824, and has not succeeded, though it has the very able assistance of Dr. Mc. Clelland as the surgical professor.

To fill up the long vacation of medical study between the 1st of March and the 1st of November, wherein no lectures

are usually given in the States, and to keep up the chain of instruction in the student's mind, a medical institute was established, a few years ago, in Philadelphia, by some of the leading medical men—professors in the university, and others, for supplying the desideratum in question, as well as to benefit themselves, as gentlemen embarked in the profession of public instructors. The course in the institute is eight months, with one month's vacation in August. There are six professors, some of whom lecture twice, and others oftener, so as to give eighteen lectures a week. The fee for the whole course of lectures is 100 dollars. By this means the students have a continued course of sixteen months' study, including the four months' regular course at the beginning, and the same at the end of this long term; after which they are allowed to graduate as M.D., and thus compensating for a three years' course of study under a practitioner, including two courses of regular lectures. The institute building is plain, and on a neat, appropriate, and economical scale; and I make no doubt will answer the purposes of all concerned. I had the pleasure of hearing a lecture on chemistry, delivered by Dr. Mitchell, to a class of one hundred students. The Dr. is an ardent cultivator of his profession, and he, as well as several other teachers, complains of the want of elementary education among the students of medicine; confessing also, the curriculum of study is too short for a degree—even supposing a great deal of reading is accomplished by the students.

Though Philadelphia possesses many excellent advantages for perfecting the student in his profession, yet the neglect of them is lamented by the teachers; and especially the opportunities of dissection, which, not being imperative on a candidate for a degree, are neglected in the race for embarking on the world, as are other collateral branches, which are left to be pursued by the pure lover of science.

The benevolent institutions in connection with medicine, are not numerous; but they are ample, respectable, and extremely well supported by funds from various sources, and withal are well provided with medical officers of talent, and other superintendents. Of these institutions, may be ranked, first, the Pennsylvania Hospital, which was founded by a number of benevolent citizens, and incorporated in 1751. It provides for the reception of insane persons, and those afflicted with all other diseases, not contagious. A lying-in department for poor married women of respectable character, has since been added, on a donation from the Philadelphia city cavalry, from monies received by them for services during the revolutionary war. The managers annually elect three physicians, three

surgeons, and two physicians for the lying-in department; one physician and one surgeon attending in rotation for four months, and one obstetrician for six months; all of whom must be doctors in medicine, and members of the corporation. Two young graduates in medicine reside in the hospital, and take charge alternately of the above three departments, under the direction of the visiting physicians and surgeons: there is also an apothecary. The services of the medical officers are gratuitous, and the students of medicine, who attend the practice of the hospital, pay a fee of ten dollars annually; but these fees, which in many other hospitals are the perquisite of the medical staff in attendance, are here generously devoted to the endowment and support of a medical library, which now consists of upwards of 6000 volumes. Students have the use of this library, while attending the hospital, and a right to use it during life for twenty-five dollars. Notwithstanding the apparently great advantages of such an institution, the number of students frequenting the annual practice, only average from twenty to twenty-five, out of the four hundred and upwards who attend the courses of lectures in the city. There are, however, I understand, no clinical lectures given within the walls, nor is there any morbid museum—circumstances which should not wholly be attributed to any lack of zeal or capability on the part of the medical officers, but rather to the jealousy which the lay managers and members of the corporation entertain of any thing like professional monopoly.

After the accommodation of as many poor patients as the state of the funds will permit, pay-patients are received, and charged at the rate of three to six dollars per week, according to their circumstances; and for which rate they are provided with bed, board, and medical attendance. So highly in these respects are the accommodations considered, that many respectable citizens, who have no relatives to take care of them at home, avail themselves of this retreat during sickness.

The admissions for the year ending the 24th of April last, were 455 *pay*, and 673 poor patients; of the latter of whom no less than 384 were natives of Ireland, and only 68 from England, Wales, and Scotland. From the reports of late years, the average number of deaths for all admissions, are about 1 in 9.5, of which deaths 1 in 10 are from fevers: the yearly admissions of cases of insanity are about 70; and there were in the wards last spring in all 118 cases of this malady. The deaths for the period of seventy-six years, have been as 1 in 6.5 of all admissions under this last department of disease; though it must be remembered that many would die of old age, as well as of other complaints.

The number of women *accouchées*, last year, were sixty-eight.

During a walk through the wards, Dr. Harris, surgeon in the United States navy, and one of the surgeons of the hospital, shewed me some good results from the wax fusion, in cases of old and excavated ulcers. He adds a little turpentine to the wax, and the cicatrix effected seems very firm; indeed the application appears to act by a gentle and well adapted pressure on the disunited and debilitated textures. A case of erosive *noli me tangere* also appeared to be doing well under the fusion, which had not been removed for three weeks, and there appeared no discharge about the part. It is the practice, with some of the surgeons, to splint and bandage their cases of *morbis coxarius* from the very first, and confine them to bed. The result was spoken of as being very satisfactory. By this means all relative motion is certainly prevented, which is an important point to be obtained; and if an anchylosis is formed, the limb will be straighter and of more service thereafter.*

* The wards are very airy and extensive, and the pay patients are most comfortably lodged. The staircases are spacious, neatly carpeted, and kept very clean: and the officers' apartments richly furnished. There is an operating theatre capable of holding three hundred persons, and well lighted from a cupola, round which, on the outside, is a balcony and balustrade, commanding a most extensive view of the whole city—which appears planted in the midst of the richest groves of the forest, with only three steeples or church spires peering above the far receding level of roofs, chimney tops, and the green summits and rich shades of the elm, the cotton-wood tree, and the lime. The real estate of the hospital corporation consists of ten acres, forming one of the fine squares in the city, and on part of which the building stands. The hospital is formed of a centre and two unequal wings—all having a venerable appearance, and surrounded by majestic planetrees. The height of the centre is 72 feet, and it contains four stories; the wings are each 27 broad by 111 feet long. The insane patients are in apartments from the attic to the basement story of the centre, from which they have access to an airing-ground without; but their accommodation is too confined, and far too much exposed to the noise and hum of the city. It is under consideration, however, to exchange some of the land in the city for a farm in the country, on which an appropriate asylum may be built for patients of this description; which will be a manifest improvement in this department. In addition to the main buildings, there are detached ones for colored people and whites labouring under venereal diseases: also stabling and a carriage house, in which are kept in first order, a carriage and a pair of horses—bequeathed, with funds for their support, by a Dr. Cooper, formerly a physician of the hospital. There are also twelve cows kept in the square; and there are an icehouse, and greenhouses containing a good collection of exotic plants in the middle of a garden of two acres. A fine bronzed statue of William Penn, presented by his grandson John Penn Esq., stands on a pedestal of white marble on the lawn in front of the hospital. A chair, once the property of that great colonist is preserved in the house; and a scion, from the elm tree under which was held the celebrated treaty with the Indians in 1682, has attained a considerable size in the square on the west side. In an appropriate building in this street on the north side is exhibited the painting of "Christ healing the Sick," presented to the hospital by the late Benjamin West; and its exhibition to the public procures a revenue of from 500 to 600 dollars a year.

The Philadelphia Dispensary, instituted in 1786, passes through its books above 4000 patients annually; and has a medical staff of six attending and four consulting physicians and surgeons, and a resident apothecary.

There is also an alms-house hospital a little way out of town, which provides for all the pauper patients, and receives all cases of chronic disease occurring among the poor; but the extent of the professional business in this institution was not ascertained.

A naval asylum has been lately erected in the suburbs by the United States Government, out of the funds that have accumulated since the revolution, from the tax of $12\frac{1}{2}$ cents per month on the pay of all officers and men in the United States navy. This fund had accumulated to a great amount, and had never been before applied to any of the purposes intended, until the erection of this building, which is said to have cost 200,000 dollars, and that of another similar at Norfolk. The yearly revenue from this tax is about 19,000 dollars.*

Concerning the nature of the medical service in the United States' Navy, it is not required that the candidate shall have previously passed any faculty of examiners, or have acquired a degree; the number of schools and colleges throughout the Union have deterred the Government from giving any the preference. Candidates for the medical service are examined by a commission of two or more senior surgeons of the navy, appointed at the time, and without any salary or authority similar to that of a Board. The curriculum of education is not much regarded, provided the candidate is found, on peremptory examination, to be qualified. The pay is rather better for the juniors than in our service; but the full pay is only enjoyed while afloat—in harbour, or while refitting it is reduced. The rate to assistants and full surgeons rises from thirty to ninety dollars per month, according to the length of service;

* This Greenwich in miniature, at Philadelphia, is now covered in;—is situate near the banks of the Schylkill on a plot of eighteen acres, purchased by Government;—is three stories high, and built of coarse sandstone, with a basement colonnade of square granite pillars, supporting piazzas of wood surrounded by iron pillars to the projecting roof. The central front has an elevated portico of Ionic pillars and pediment, with entablature running round the whole front, all of white marble. There is in the centre a good geometrical stair of white marble; the whole is fire-proof; dormitories all single, and bedsteads of iron, with bottoms of strong iron wire laced across, which affords a little elasticity. There is also a chapel in the centre, and baths and water-closets in each story. The whole is fitted to receive four hundred superannuated seamen; but at present, one part only is occupied as an hospital for the sick seamen belonging to the navy at this port. The structure is excellent, and does great credit to the country; but it will not be required in any degree for the purposes in view, until the naval annals of the States have vastly more increased.

and one, two, or three rations equal to seven dollars a month, are also allowed on a regular gradation of rank. To give more efficacy and system to this part of the public service, the office of surgeon general to the navy was last congress instituted, after a great deal of opposition by the economical parts of the legislature. The arguments against the office were exceedingly captious and trifling, evincing the greatest jealousy of creating any ranks in the medical staff of the navy; but the forcible and intelligent advocacy of the measure by a Mr. Haynes, who frequently referred, with admiration, to the analogous offices in our service, eventually carried the measure.

The medical statistics of Philadelphia are of great interest, and susceptible of much practical deduction and application. The tables of mortality are accurately kept; and every person pursuing and practising midwifery is required, under a penalty of twenty-five dollars for refusal or neglect, to report to the health office every month the number and sexes of the births that have taken place under his care and superintendence. The returns for the year ending 1st January, 1830, from 141 practitioners of midwifery, were 3.638 male, and 3.357 female children. The whole deaths in the city, including the black population were 4294,—of whom 1 in 6.7 died of consumption; 1 in 17 of fevers of all species; and 1 in 14.3 were still-born. The great proportion of still-born to the other deaths is very remarkable, both in this city and in New York, where it is nearly the same, being 1 in 14;* the proportion in London and its liberties was only 1 in 24 of the deaths in 1827—though the consumptions are as high as 1 to 5.8. This mortality in early life in the cities of America may, in some measure, be attributed to the more delicate manner in which females are physically educated; also to their very early introduction into society, to their juvenile marriages—and finally to the relaxing nature of the summer and autumnal seasons in the States. The average mean temperature of the months for ten years at Philadelphia is, for January 30°, February 32°, March 48°, April 50°, May 59°, June 71°, July 75°, August 72°, September 65°, October 55°, November 46°, Dec. 34°, of Fahrenheit; and the deaths of children, including those still-born, for twenty years, are in the order of the months as above noted, 1722, 1611, 1891, 1705, 1668, 2217, 3458, 3787, 2508, 1994, 1867, 1820.

The average proportion of deaths to the population for fourteen years prior to 1820 was 1 in 47.86. The great mor-

* Note, the average for 20 is 1.17.1 of the whole deaths.

talities of the black population heightens the average very considerably, as the average proportion of deaths among them, who form about 9.3 per cent of the whole population, is as 1 in 19, on the most favourable calculation, which being allowed to the average on the whites, would improve the healthiness among them as 1 in 50.8.

By the census of 1820, the proportion of males to females in Philadelphia was as 100 to 111; while the average proportion throughout the whole States is 100 males to 97 females. But what is very remarkable, is the excess of males among the children in the New States—in Alabama, Illinois, Missouri, Indiana, and Mississippi, the rate is 100 boys to 92 girls, under ten years of age.

For more details on the Statistics of Philadelphia, the reader is referred to Dr. Emerson's very comprehensive and philosophical treatise on this subject, whose kindness afforded me much information on this very engaging study.

(To be continued.)

ART. V.—*Contributions to Pathology. (Peripneumonia, with abscess of the Lungs; Fatuity with Paralysis.)* By WILLIAM DAVIDSON, M. R. C. S. Ed. and Surgeon, to the County Lunatic Asylum, Lancaster.

IN submitting the following cases to the public, I have studiously abstained from generalising on the few facts detailed, and theorizing on grounds that are at once slight, and perhaps untenable. My object has been quite of a different description, to collect facts and to lay them before the profession, leaving future observation to determine their value or insignificance. Yet I must admit that it has been my wish to select facts that have appeared to me of peculiar interest, to assign to each its proper value, and to touch upon the point of doctrine it may have a tendency to clear up. If in my attempt to accomplish this object, I should appear to some to have overloaded my cases with unnecessary reflections, I must plead as an apology the example of a great master, Cruveilhier, whose splendid work on pathological anatomy will go far, when completed, to realize the somewhat vainglorious assertion contained in the preface, that "France will be henceforth the classic ground of pathology, and will hold with a firm grasp the sceptre which she has won by labours so important to mankind."

J. L. ætat 55, a monomaniacal patient of this hospital, of a feeble constitution, and dissolute habits in early life, has had Chronic Bronchitis for some weeks past.

8th September, 1830.—Presents to day the following state. Severe cough, with rusty, viscid, semitransparent and scanty sputa ; pulse 96, full and hard ; excessive dyspnœa ; inability to take a full inspiration ; acute pain in the left chest extending from the sixth to the ninth rib anteriorly, and aggravated on pressing the intercostal spaces with the fingers ; tongue white ; countenance anxious. Stethoscopy. Over the part indicated there is a distinct crepitant rattle while the respiratory murmur is almost masked, which last is clear, and rather stronger than usual over the rest of the thorax. Chest sounds well on percussion except in the left præcordial region where it is distinctly duller than in the right. I shall purposely omit the details of treatment, as they consisted of the usual means pursued with activity, and are unimportant in a pathological point of view.

9th.—Expectoration less viscid, whiter, and rather more copious ; crepitant rattle not quite so distinct, and there is a return of the vesicular respiration. General symptoms mitigated, and his countenance is less anxious.

10th.—A return of the unfavourable symptoms, with great restlessness and dyspnœa ; crepitant rattle more intense and extending up to the fifth rib ; percussion gives the same dull sound, and there is an absence of respiration from the fifth to the ninth rib : pulse 100, full and hard, slightly irregular ; great distress and anxiety ; countenance much flushed. Still the patient does not complain much, and, with the exception of his breathing, says he is quite easy.

14th.—Respiratory murmur returning ; crepitant rattle rather less distinct ; cough less frequent with mucous expectoration. Percussion gives a clear sound in the superior part of the præcordial space, but is rather duller opposite the apex of the heart.

He appears to be much easier, and breathes with less frequency and difficulty ; pyrexia and flushing gone ; pulse 86, somewhat hard and vibrating. He went on improving until the 17th when he presented the following symptoms. Expectoration viscid and scanty ; respiration hurried and anxious, with frequent dry cough ; skin hot ; countenance flushed ; pulse strong, quick and vibrating ; thoracic movements in breathing are very slight in the left side, and the respiration chiefly abdominal ; pulse quick, full, and wiry. Lies constantly on his back, and the slightest effort produces intolerable dyspnœa ; crepitant rattle intense, with total suppression of the vesicular respiration extending from the fourth to the ninth rib of the left side anteriorly. Heart beating violently against the thoracic parietes ; its movements, when heard with the stethoscope, are characterised by a strong impulse, and remarkably dull sound,

particularly during the contractions of the left ventricle. He continued nearly in this state until the 24th, when I find the following report in the Journal. Very dull sound on percussion extending from the second to the ninth rib anteriorly, and laterally : it becomes more apparent as the lower part of this space is percussed, corresponding with the crepitant rattle which diminishes downwards ; respiratory murmur completely suppressed in the lower part of this space, and only existing in a trifling degree under the third and fourth ribs. Impulse and dullness of sound of the left ventricular systole still more remarkable, and confined to the left præcordial region. Pulse wiry, but not full ; commencing emaciation and debility, with considerable oppression.

2nd October.—Hectic flushings with nightly exacerbations, and occasional well marked rigors ; cough frequent with mucopurulent expectoration.

8th.—Respiratory murmur barely perceptible over the whole of the left side of the chest anteriorly ; the sound on percussion is dead over the same space ; respiration on the right side very loud and even puerile. For the first time a cavernous bubbling ronchus is distinctly audible, immediately under the sternal extremity of the left fourth rib ; cardiac symptoms unchanged. From this period he became rapidly more emaciated, and died completely exhausted on the 18th, the pulse retaining its wiry character to the last. A few days previous to his dissolution there was a very distinct pectoriloquy over the situation of the cavernous rattle. Dissection twenty-four hours after death, in which I was assisted by Mr. Harrison, of Lancaster, to whom I previously communicated the following diagnosis. Hepatisation in the second or third stage, of the whole anterior part of the left lung : adhesions and false membranes between the pulmonary and costal pluræ : circumscribed abscess immediately under the sternal extremity of the fourth rib of the same side : right lung tolerably sound : concentric hypertrophy of the left ventricle without valvular disease.

THORAX.—The whole of the anterior portion of the left lung presented a mixture of grey and red hepatisation, with predominance of the latter. The posterior portions were in a state of simple inflammatory engorgement in a very slight degree, and quite crepitant. Here and there, a few small grey granulations of equal form and size, were scattered through the grey hepatised pulmonary substance. The lung adhered firmly to the costal pleura by means of false membranes in different stages of organization, but all apparently of recent date.

A large abscess, capable of holding, at least, two ounces of fluid, was discovered immediately under the fourth rib, in the

anterior part of the lung ; its walls consisted of the diseased pulmonary substance, were ragged, irregular, and not lined with false membrane. It contained about an ounce of thin dark coloured pus, of intolerable feter, which at the lower part of the ulcerated cavity seemed to pass gradually into a purulent detritus, and this into a firmer tissue still loaded with pus as we receded from the collection. The anterior boundary was composed of the pulmonary and costal pleuræ and the intercostal muscles all firmly glued together, and in such a state of disorganization that, had the patient lived a few hours longer, the abscess would have made its way through these and the integuments of the chest. The mucous membrane of the bronchial canals was found in a high state of phlogosis. The right lung was comparatively healthy ; of an unusual size, and studded with a few miliary granulations. On opening the pericardium, which was rather thickened, the heart presented a larger appearance than natural. The walls of the left ventricle were unusually high coloured, of a remarkably firm consistence, almost amounting to induration, and were fully twelve lines in thickness, which was equal throughout from the base to the apex. This hypertrophy had taken place at the expense of the chamber of the ventricle which was diminished nearly one-half.

The left auricle was slightly dilated and hypertrophied. The valves and the right cavities were healthy.

ABDOMEN.—The liver was firmly adherent to the diaphragm, abdominal peritoneum and stomach. Its peritoneal coat was thickened and opaque at its concave surface, and the whole was studded with miliary tubercles in a state of softening. The former was considerably enlarged in volume, particularly its left lobe, was exceedingly friable and presented that form of yellow degeneration denominated cirrhose by the French. The stomach was enormously increased in bulk, and its cellular coat covered with ripe tubercles of various sizes. The whole extent of the intestinal canal, from the pylorus to the rectum, was studded with round tubercles, white, opaque, of the colour and consistence of coagulated albumen, of various sizes, and generally larger than the miliary tubercles found in the lungs of consumptive patients. They were chiefly seated on the free surface of the serous membrane, and presented the exact appearance of the surface of the body covered with variolar pustules in a state approaching to maturity. The abdominal and visceral peritoneum were adherent by a loose, elastic, filamentous cellular membrane, so that there was little doubt in our minds that this patient had, at one time, suffered from peritoneal inflammation—the most probable point of departure

of the tubercular growth.* As, from particular circumstances, the examination could not be carried farther, the head was not opened. The pulmonary abscess in this case had not one point of resemblance to tubercular excavations: there was a real destruction of the pulmonary substance without a vestige of tubercular infiltration in its immediate vicinity, or throughout the whole of the lung. I am not acquainted with any morbid phenomenon, respecting which there has been a greater diversity of opinion between the French and English pathologists, than the one now before us: the former appearing to rank it amongst the *cas rares* as an occurrence, and as a morbid operation next to impossible; while many of the latter consider it as taking place in half the cases of pneumonia which have been badly treated.

Let us place in opposition the testimony of Baillie on the one side, and that of Laennec and his followers on the other; the difference will appear very remarkable.

Baillie.—It is very common to find abscesses in the lungs; (he is speaking of pneumonia.) These sometimes consist of small cavities containing pus, and, at other times, the cavities are very large, so that the greater part of the substance of the lungs has been destroyed.†

Laennec.—Among several hundred dissections of peripneumonic subjects which I have made in a period of more than twenty years, I have not met with a collection of pus in an inflamed lung more than five or six times.‡

Roche and Sanson.—It is only in extremely rare cases of pneumonia that we meet with pus collected in dépôts, which are inconsiderable, not numerous, and dispersed in various directions.||

* Bichat, who flourished long before it had become fashionable to ascribe every new production to inflammatory action, to the exclusion altogether of a perverted state of nutrition or secretion, which is now made to act a principal part in organic disease or accidental deposits, appears to exclude the former as a cause of peritoneal tubercles, to judge from the following sentence,—*maladie qu'il faudroit plutôt ranger dans une autre classe que celles des phlegmasies*; or rather, as would appear from some expressions at the end of the same article, to attribute their development to a specific inflammation which he denominates tubercular.* But in viewing them as the result of the concretion of isolated albuminous deposits, which like other products, are secreted by serous surfaces under the influence of phlogosis, we simplify a question that has given rise to a great deal of discussion.

† Morbid Anatomy p 61. ‡ Forbes's translation of Laennec p 61, 2nd edition.

|| Nouveaux Elemens de Pathologie medico-chirurgicale tome i. p. 402, 2nd edition.

Andral.—As for ourselves we have but in one solitary instance had an opportunity of witnessing a real abscess as a consequence of pneumonia; this was in a patient who fell a victim, on the nineteenth day, to pulmonic inflammation; and to show still further that this opinion is not confined to these celebrated writers, we find, farther on, the following statement—“ We have seen another well marked case of abscess after pneumonia, in an individual whose lung was presented to the Royal Academy of medicine,”* as a great curiosity apparently.

With the view of supplying still farther evidence to show that suppuration of the lungs is of no inconsiderable frequency in this climate, at least in the patients confined in this Hospital, and of enabling us to arrive at some satisfactory conclusions as to the point at issue, I have referred back to several fatal cases of pneumonia and its combinations, which have taken place here in a period of little more than two years, and have noted the following particulars.

CASE 1.—Pleuropneumonia of the right side accompanied with high fever and pain in the chest. On the eighth day rigors with great debility, intense thirst, a deeply anxious countenance and intolerable dyspnœa.

9th day.—Expectoration of an enormous quantity of pus : and death.

Hepaticization of the right lung, in which was an extensive abscess with ragged walls without false membrane, and communicating with an inflamed bronchus.

CASE 2nd.—Symptoms of pneumonia, accompanied with great debility, in a patient broken down by cerebral disease.

3rd day.—Bloody expectoration, great dejection and pinched state of the countenance. Death on the 7th, after a copious expectoration of thick well conditioned pus. Partial detached masses of red hepaticization, and in the centre of one a large deposition of pus collected into a foyer and opening into a bronchus. Sero-purulent effusion into both sacs of the pleuræ; serous lining of the pericardium minutely injected, smeared over with yellow lymph, like jelly, and containing some flocculent serum.

CASE 3rd.—After a very protracted asthmatic attack, symptoms of pneumonia, with excessive prostration, irregular shiverings, and threatenings of suffocation.

4th day.—Copious purulent expectoration of excessive fœtor; countenance haggard and expressive of great suffering. Death on the 8th. Superior lobe of the right lung gorged and hepa-

* *Andral Clinique medicale.* tome 1. p. 505.

tized in distinct portions; on its surface an albuminous deposit of recent formation, directly under which were several small abscesses with ragged, irregular and sinuous boundaries.

CASE 4th.—Pleuropneumonia of the right side. Doing well until the 7th day, when she was attacked with violent and repeated paroxysms of cough, with purulent expectoration, and the tongue began to swell in a frightful manner so as to occupy nearly the whole of the mouth and pharynx, and presented a foul ulcer about the middle of its dorsum. The mucous membrane of the throat, mouth and nasal cavities, of a dark red colour, and covered with sloughs.

Tumefaction of the tongue rapidly increased, which, with the pulmonic affection, put a period to her existence on the 10th day. Right lung livid, in some parts in a state of inflammatory engorgement, and in others hepatized. An abscess containing a sanio-purulent fluid in the same lobe: pleuræ pulmonalis and costalis glued together with recent false membranes. It may be necessary to remark that in none of the foregoing cases was there the slightest trace of tubercle, tubercular infiltration, or tubercular vomicae—a very different kind of formation from genuine foyers of pus, the direct product of inflammatory action.

These cases appear to me conclusive, in proving the greater frequency of pulmonary abscess, than we are taught by the present French school to believe, and I could readily multiply instances of the same kind, both from notes of cases that have come within my own observation, and from the writings of others, particularly our best surgical authors; but such a proceeding would only tire the patience of the reader, who may probably think a sufficient number has been given in support of the arguments advanced on this side of the question.

Mr. Arnott, in his very ingenious paper on the secondary effects of inflammation of veins, mentions amongst the various morbid appearances common to this most subtle and obscure disease, and which are usually regarded as indications of the recent existence of violent inflammation in phlebitis, “hepatisation of the lungs and small collections like a mixture of pus and lymph.”* He has furnished us, in the course of his paper, with a very numerous list of cases exhibiting these appearances, which, in whatever light they may be viewed, whether as translations of matter, or an inflammatory metastasis from one organ to another, or as phenomena in the production of which diseased changes in the blood itself act a predominant part, are yet not without value in our present inquiry.

* Arnott in *Medico. Chirurg. Transactions*, vol. 15 *passim*.

Dr. Forbes, in his note to his admirable Translation of Laennec, in attributing the discrepancy to imperfect examination in conducting our dissections, seems to award the palm of accuracy to our neighbours, and is candid enough to confess that he himself has been misled by similar inadvertency and carelessness. Although there may be some degree of truth in this admission, yet I am unwilling to accuse such men as Baillie of so heinous a pathological delinquency, as mistaking the nature of morbid phenomena so widely differing from each other in every thing which strikes the eye of the anatomist, as circumscribed abscess, and diffused purulent infiltration. From my own observation, I am decidedly of opinion that the termination of pneumonia in abscess is by no means uncommon in this country, resulting most probably from the greater intensity of pulmonic inflammatory action in our cold and humid atmosphere, from the greater resistance which it offers to our therapeutic means, and, when not immediately fatal, its consequent aptitude to pass into a chronic form, of which form, as in other viscera, induration, suppuration and abscess are observed to be a frequent termination. Whatever may be the value of this opinion, it cannot, I think, be doubted that difference of temperature exerts a greater influence in moderating or aggravating inflammation or irritation of the anatomical elements which enter into the composition of the lungs, than that of all the other tissues which build up the organic machine.

Again, can we admit with Laennec, as a solution of this question, the greater frequency of partial pneumonia in our climate, or that the observations of Sir A. Crichton, one of the most strenuous assertors of the frequent occurrence of pneumonic abscess, and of other authors, have been made during a medical constitution when such abscesses were peculiarly prevalent? The former opinion is entitled to some weight, as late researches have proved the frequency of this species of pneumonia both in an acute and chronic form, the latter of which is supposed to give rise to that circumscribed induration which stands in the same relation to chronic, as hepatization to acute inflammation, and, in this form, constituting, according to Alison and Chomel, the miliary granulations of Bayle. It requires no great stretch to conceive the suppurative action of a portion of pulmonary tissue thus indurated, and the formation of an abscess of greater or less dimensions. I have witnessed many dissections of lungs, which directly lead to these conclusions; and I am happy in finding Dr. Alison of Edinburgh taking a similar view of the subject. "I would say decidedly," adds this ingenious observer, "that a much greater

(often the whole) of the induration in the inflamed lungs of old people consists of this hepatized induration, or dark colored condensation of the proper pulmonary substance."* Admitting the facts from which this most important conclusion is drawn, he must be very chary of his belief who will deny the occurrence of similar morbid deviations as a frequent termination of partial acute inflammation of the air cells in a climate like this, so remarkable for the frequency, intensity, and I may add fatal nature of pulmonic disease.†

Fatuity with paralysis.

J. W., ætat. 56, an old artillery man, admitted into the asylum on the 19th May, 1830, labouring under general paralysis and fatuity of long standing. A short time after his admission he had occasional attacks of giddiness and other head affections which assumed a variety of characters; but the most remarkable was a constant venous plethora of the integuments of the head and neck, which was not relieved by any kind of treatment. He complained constantly of violent pain, and a sense of heaviness, in the head and neck, with a degree of deafness. After a few weeks he had an attack of hemiplegia of the right side, and he remained speechless, with his mouth twisted to the left, for upwards of a week. From this time he lost the use of his limbs.

September 14th.—Had an attack of convulsions of both upper extremities, with vomiting, and other urgent symptoms. He was bled, with great relief; but without any diminution of the venous plethora. He was next affected with oppression, sometimes amounting to coma, which returned at intervals, and went off after various periods: and he died, after having been apoplectic for a few hours, on the 5th of November; the venous plethora continuing to the last.

Dissection forty eight hours after death.

On raising the calvarium, our attention was first attracted to the vascular appearance of the dura mater; on reflecting which the pia mater was found to be injected with blood, partly thickened and opaque from inflammation, and partly infiltrated with serous fluid, which flowed out freely during an attempt to separate it from the arachnoid. The veins of the former were preternaturally enlarged and gorged with blood, two of

* Edinburgh Medico-Chirurgical Transactions, vol. i. p. 371.

† I would take the liberty to call the attention of your readers to a question not only of considerable pathological interest, but of much practical importance, while in accordance with the testimony of the best authors, it will probably be admitted that grey hepatization, or in other words diffused purulent infiltration of the lungs, is beyond the reach of any means, we have reason to believe that isolated abscesses of the same organ leave us some degree of hope, when occurring in patients in whom much constitutional disturbance and exhaustion have not already supervened.

which on the posterior convexity of the brain had a completely varicose appearance, and rose above the surface of the arachnoid, like the diseased saphena above the integuments of the leg. The pia mater was adherent to the summit of the convolutions, and to the arachnoid, which was also opaque and thickened. The superficial layer of the cortical substance appeared to be of greater consistence than natural, and, when torn up with the pia mater, exhibited the lower stratum softened and inflamed, and having at its denuded surface the exact appearance of healthy granulations.*

* For a most accurate and minute description of the various cerebral lesions usually accompanying insanity, I refer the reader to the truly admirable article by Foville, entitled "Alienation Mentale" in the new *Dictionnaire de Medecine et Chirurgie Pratique*. This writer gives us the result of several hundred dissections of insane cases, from which it would appear, that the cortical substance is that in which there exists the greatest morbid deviation, and from which, and other alterations in the medullary matter, the ingenious author has derived the following conclusions

1° Les alterations de la substance corticale sont directement liées aux derangemens intellectuels.

2° Les alterations de la substance blanche sont directement liées aux alterations des mouvemens.

In illustration, the following case is given by Rostan, who seems to acquiesce in the conclusions drawn by his distinguished pupil—conclusions which, if well founded, will completely explode the old notion of what the French would call *folies essentielles*. "In a person who had met with a blow on the head, there appeared, at first, no symptom of disease; soon afterwards the intellects became impaired, the memory was affected, but the muscular movements were entire; these, however, soon underwent an alteration, and the patient became hemiplegic and died. On opening the head an exostosis was found growing from the internal table of the parietal bones. It is evident that the first effect of this exostosis was to compress the cortical substance: the first symptoms therefore bore upon the intellects; lately on the medullary matter being also compressed, the movements were impaired, and at last paralysis supervened."*

How far these views may be confirmed by other observers, it is not for me to say: but certain it is that in the course of a most extensive series of dissections of insane subjects, I have not met with a single instance, either recent or old, which did not present some modification of the appearances recorded in the text; and which bear a striking analogy to those mentioned by Dr. Foville, from whose paper I cannot resist translating the following description of this very important morbid alteration. "The most constant of their alterations is, in my opinion, the following. The superficial part of the cortical substance has acquired, to a uniform but inconsiderable depth a consistence decidedly firmer than in the healthy state; at the same time the consistence of the deeper seated parts of the same substance is diminished in such a manner that it is easy to raise along the surface a species of membrane of a uniform thickness, smooth externally, irregular internally, and of a paler color than natural. The parts which remain underneath are on the contrary much redder, elevated into nipple-like tuberosities, (*mammellonnées*) soft; and represent, if I may be permitted to use a very coarse comparison, the granulations of a wounded surface covered with a sort of epidermis." This author's account of every thing connected with the history of insanity, both in respect to its moral and medical treatment, is excellent; it appears to be free from that love of generalising, the besetting sin of our best writers, and might be safely recommended as an epitome, containing all that is known in regard to the pathology of this disease.

* *Recherches sur le ramollissement &c.*, p. 253., second edition.

The medullary substance was much softer than natural, extremely vascular, and when cut into, was spotted over with unusually large drops of blood, most of them of an evidently venous color. On opening the third and fourth ventricles they were found filled with coagulated blood, the product of a recent effusion. On dividing the corpora quadrigemina, a cavity, lined with a cyst of organized lymph of old formation, was discovered in the left tuberosities, communicating with the iter ad quartum ventriculum by a ragged fissure, through which the blood found in the ventricles, had been extravasated. Into this there opened a small artery singularly thickened and discolored, which could be traced round the left thalamus and crus cerebri, down to the base of the brain, where it inosculated with a small branch from the circle of Willis in a similarly diseased condition.

At the union of the vertebral with the basilar arteries an aneurism about the size of a hazel nut was discovered, containing a small quantity of reddish serum, and firmly pressing upon the corpora pyramidalia. The walls of the aneurism seemed to consist of the three arterial coats, in a thickened and pulpy state, so that its cavity was much smaller than could have been expected, from its external volume. The inner coat of all the arterial trunks at the base of the brain, was much thickened, was in various points of a soft pulpy consistence, and could be easily detached from the middle coat, which was also brittle and occasionally pulpy. These vessels were indeed so remarkably enlarged that they could be traced in their minute ramifications through the cerebral mass. The venous system was nearly as much diseased as the arterial. It presented, in its larger branches, a curiously speckled, and, in its minute ramules, a granular appearance,* and was throughout, as well as the sinuses, enlarged in a most extraordinary degree. The former appearance was caused by the venous cavities being, at various points, nearly obliterated with a caseous substance similar to that which was observed in the arteries, but of a yellow color. This was particularly remarkable in the veins of corpus callosum, which, as they mounted over its anterior extremity, and at their entrance into the inferior longitudinal sinus, were rendered completely impervious by it. This substance was so intimately adherent to the inner tunic of these vessels, that it might, with great probability, be considered

* It was impossible to ascertain exactly the cause of this curious granular condition; but, when examined with a good glass, it appeared to arise from deposits of minute points of albumen between the coats of the veins. A similar appearance was very observable in the veins of the choroid plexus.

a steatomatous degeneration of the same. The lateral sinuses, as far as their termination, at the foramen lacerum basis cranii, in the internal jugular veins, were considerably distended, and partially obliterated by a deposit of a similar color and consistence with that observed in the veins.

About four ounces of turbid serum were collected in the lateral ventricles and basis cranii. I was curious to learn whether this diseased state of the cerebral vessels had extended to those of the rest of the system, and proceeded to examine, with great care, the arteries of the trunk and extremities from the palmar and tarsal branches to the aorta. The whole of the internal coat of the femoral and external iliacs, on both sides, was found to be thickened and brittle, so that it could be readily scraped off with the nails from the middle coat like soft cheese. The internal and common iliacs, and abdominal aorta presented nothing remarkable, but the cavity of the thoracic aorta from the semilunar valves to the arch, was as it were paved with osseous and fibro cartilaginous plates, which seemed to have been originally formed between the internal coat and its fine pellicle, and to have ultimately made their way through the latter, so that in many points they were bathed in the blood of the artery. The arteries of the upper extremities were healthy, with the exception of the right axillary and subclavian, from the lower margin of the pectoralis minor to the sternal edge of the scaleni muscles, where they presented precisely the same morbid phenomena as the femorals and iliacs. I examined, with the same degree of care, the veins both of the trunk and extremities, but could perceive no alteration which could be justly represented as morbid, either in their volume or in the structure of their coats.

I sought in vain for the smallest traces of phlogosis in any of the vessels of the two systems, excepting such as I have described, and which may be considered by many as its secondary effects.*

I transcribe the following passage from Bouillaud.

* "Thus then convinced as I am that it is an error in medical logic to attribute to one and the same cause alterations differing amongst themselves, in grouping around arterial inflammation several lesions which are not absolutely alike, I admit in the first place, that this disease produces different effects, according to its degrees of intensity and duration, and according to the structure of the organs which it attacks ; in the second place I maintain that, amongst the alterations which we meet with in the arteries, some that yet have undergone no further change, (*encore vierges de tout changement ulterieur*) are the immediate and primary product of arteritis, while others but constitute the more or less remote consequences of this disease, and arise from modifications which take place in the former, even after the inflammatory action has disappeared.

"Inflammation, a species of morbid nutrition, or morbid creative action, has a tendency to give birth, as it has been well remarked in recent times, to new productions.

All the thoracic and abdominal viscera were sound, but the liver appeared to be of a deeper colour than natural, and gorged with blood.

This case opens such an extensive field for reflection that I must forbear entering upon it; and content myself with a plain recital of facts.

ART VI.—*A Case of Bronchocele, cured by the Seton.*

By JOHN WINDSOR, F. L. S., Surgeon to the Manchester Eye Institution, &c.

BRONCHOCELE when small, is not attended with much annoyance; but as it attains a larger size it becomes a deformity, particularly in the female neck; it often produces inconvenience by its pressure on the surrounding parts, especially the Trachea and Œsophagus, and instances are recorded of its proving fatal. In the catalogue of J. Brookes's valuable and extensive Museum; there are two or three specimens mentioned of this disease, which are said to have been productive of fatal consequences. The subject of the following case, was on some occasions in imminent danger of this catastrophe.

The tumour appears to be by no means uniform in composition, but, in different cases, to consist of a variety of textures. I have seen the gland as it were simply enlarged or hypertrophied, its two lobes and their conjoining isthmus being increased equally in size, and when opened displaying a pellucid granular structure, with a few small vessels ramifying through it. In some of these instances, it had formed a large mass closely investing the Trachea and Larynx, and throwing backwards and outwards the common carotids, to the tying of which, it would have proved a considerable obstacle. I have seen it also assume a cellular structure; the cells being filled with a tenacious viscid fluid of a light or pale color. In the following case, the tumour seemed to be produced chiefly by an accumulation of a dark brown fluid; which flowed out abundantly when the structure was opened.

“ This kind of generative process being once accomplished, the inflammation may disappear without its products disappearing along with it; these may on the contrary survive her, as children do their parents; and, after having passed through the phases of their particular development, may present the same organisation as the parts which have secreted them under the influence of inflammatory action. At this period it is evident that these productions are in no wise connected with inflammation, except as respects their primary origin. These again may take on inflammation, and secrete organisable products in the same manner, if I may be allowed so bold a comparison, as the product of conception, arrived at its complete development, has the power of giving birth to a being resembling itself.”

Nouveau Dictionnaire de Medicine, tome 3. p. 402, article Arterite.

It becomes an interesting object to adopt some other more efficacious treatment, when the complaint is not only productive of great deformity, but of serious disturbance of the health. I flatter myself that the following case will satisfactorily corroborate the power of the Seton, a remedy not *quite new, but hitherto apparently little used in these difficult circumstances. It appears to be a mode of treatment much simpler and safer than either tying the supplying vessels, or extirpating the tumour, and I hope will, on further trial, be found not less efficacious in removing the disease. In the following case, the right lobe of the gland was much the most enlarged, and was operated on the first; when the enlargement of this was removed, the other was afterwards successfully attacked by the same remedy, after an ineffectual trial of iodine had been continued for some time. The operation by seton is easily performed and attended with little pain, and there was no hæmorrhage in this case that would lead me to apprehend anything unpleasant from it in others; but other cases may certainly differ in this respect. In the first operation, on the very enlarged lobe, there was scarcely any, and in the second, on the smaller lobe, there was afterwards for a short time some bloody but chiefly venous oozing, which did not subsequently return, and was probably rather useful than injurious. The length of time during which the seton should remain, will be regulated by the circumstances of the case. In this case it was thought proper to keep up the suppurative process till the bulk of the tumour was gone, and to expedite this, a second tape was passed, after some time, diagonally across the first, with good effect. When the tumour was nearly removed, the seton was withdrawn, and the diminution proceeded till only a small hard nucleus, about the size of a filbert, was left, productive of no deformity or inconvenience. A single seton used for a short time only, afterwards, sufficed for the left less enlarged lobe. The case was seen during the treatment by my brother James Windsor, surgeon, of Liverpool, and by Dr. Kay, and frequently by my assistants.

1829, 1st Mo. January 29th.—Was desired to visit Bramhall, Ætat 21, affected with a large Bronchocele, chiefly occupying the right lobe of the gland, the left lobe being also slightly enlarged. The right lobe was very prominent, and measured 14 inches in circumference, $7\frac{1}{2}$ inches from the right side to the left, and $5\frac{1}{2}$ inches from the upper to the lower surface.

The respirations were 20 in a minute, and appeared very laborious, being of a wheezing or croaking kind, especially if she underwent any exertion, as in walking up and down stairs. Pulse 72. Tongue moderately clean. Bowels rather confined. Catamenia regular. General health tolerable.

The swelling commenced when she was about twelve years of age; and notwithstanding the use of various means to restrain it, by a practitioner lately deceased, it had gradually attained the magnitude described.

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Purgative medicine was ordered; and the tincture of Iodine was prescribed to be taken in doses of fifteen to twenty drops twice a day. A blister was applied over the tumour, which was afterwards dressed with an ointment of the hydriodate of potash, in which a drachm of the salt was united to each ounce of adeps.

2nd Mo. February 6th.—Yesterday morning, a little before rising, she had a fit of extreme dyspnœa, to which she has been sometimes subject, especially of late. She was raised from bed and placed in a chair; but remained very ill when I saw her soon afterwards, appearing quite insensible to surrounding objects, and struggling for her breath. Her face had assumed a deathly pallor, her eyes and mouth were nearly closed, her respiration was very difficult and sonorous, her pulse extremely small and frequent. No reason could be given for her being worse, excepting that it was her catamenial period. She had had another blister applied the preceding evening, the first being healed.

Some warm brandy and water was with difficulty got into her by teaspoonfuls; and sulphuric ether, and the aromatic spirit of ammonia, combined with the camphor mixture were prescribed. 4 P. M. Is now considerably better; her countenance natural again; breathing nearly as usual, i. e. still indifferent, wheezing; and when asleep very sonorous. Bowels not open. Blister discharging freely.

9th.—Has continued somewhat better since last report, her breathing easier, but still wheezing; her appetite is rather better; tongue clean; pulse from 96 to 108. Sits up and looks cheerful. At night she sleeps, supported by a bed-chair. Blister is dressed alternately with a mild cantharides and spermaceti ointment.

3d Mo. 3d.—Nearly in same state, experiencing no very severe symptoms at present from the tumour, which is somewhat reduced in magnitude, measuring now in circumference $12\frac{1}{2}$ inches—from one side to the other seven inches, and from the upper portion to the lower five inches.

5th Mo. 12th.—Has continued the remedies since last report, but the tumour continues much in the same state.

6th Mo. 2d.—The tumour having remained nearly stationary for the last three months, though the iodine has been used perseveringly and regularly, both internally and externally, and though it does not occasion at present more inconvenience or disturbance of her general health, than have been experienced of late, yet she has been desirous of something if possible more effective being tried. I therefore passed through it to-day by means of a long needle and some narrow thick tape, besmeared with cerat resinæ, a seton obliquely from left to right, and from below upwards. A quantity, perhaps two or three ounces at least, of a thin darkish fluid resembling much the tincture of iodine in appearance, but insipid and of a rather fetid odour issued, accompanied with little if any blood. She suffered scarcely any pain from the operation, but from her fear of it the carotids pulsated violently, and she experienced a severe headach during the night, and during some part of the following day, when the tumour by measurement was reduced about half an inch in each direction.

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4th.—Has had but little pain in the tumour, since the introduction of the seton : there has been a discharge from it of the same reddish brown fluid, especially at the time of dressing it, and moving the tape. The tumour is soft, and the integument over it exhibits only a very faint blush. Pulse natural. Bowels regular. Tongue pretty clean. Appetite moderate.

10th.—Since last report has been very well. Pulse pretty natural. Tongue clean. Bowels regular. Tumour not painful, but sore on pressure : it discharges still freely by the lower orifice, a reddish brown liquid. By measurement to-day the tumour was in circumference 12 inches, from side to side six inches, and from the upper to the lower portion, four inches.

15th.—The part is dressed daily : the discharge from it for the last few days has become more of a thick reddish pus, than the thin brown red fluid it was before. On some days it is very little ; to-day by moderate pressure, 2 or 3 ounces of very fetid pus issued, showing that the tumour, which is now very tender, is undergoing a suppurative process. General health tolerable.

21st.—On the 19th, and again to-day, but not on the intervening day, a considerable quantity, 2 or 3 ounces each time of fetid and reddish pus, mixed with bloody coagula came out ; a hard nucleus about the size of a walnut can be felt on the right side ; the rest of the tumour is very soft, especially after each time of expressing the matter. Pulse rather quiet, about 100. Appetite indifferent, but feels in other respects tolerably well.

26th.—About 4 ounces of reddish yellow, and not so fetid pus, issued from the tumour to-day, with a few solid coagula.

7th, Mo. 7th.—Little discharge since last report till to-day, and now less than before. The tumour increases a little between the times of discharging, but is on the whole contracting. Her pulse rather quick, but she walks out and feels tolerably well.

Tumour now $8\frac{1}{2}$ inches in circumference, $4\frac{1}{2}$ from side to side, and $3\frac{3}{4}$ from above to below.

30th. —Tumour rather diminishing. It has discharged more the last few days. Her general health tolerable.

8th Mo. 16th.—In order to expedite the cure, a week since another tape was passed through the tumour. It has been very sore since that time, and there is a moderate purulent discharge from it. Its bulk has not diminished much lately. Her general health rather delicate, but does not complain much, except occasionally of pain of her head and of the back of the neck.

9th Mo. 10th.—Tumour is very small now. Her general health tolerable.

12th Mo. 15th.—Each lobe of thyroid is now about the size of a walnut, but that on the right side (where seton has been used) is much harder, though now a little less than that on the left.

1830—4th Mo. 27th—The tumour of right lobe being reduced to a very small hard nucleus, the seton was withdrawn about a month since. From that time the tumour of the left lobe has been diligently

rubbed with an iodine liniment; but no reduction of it having been obtained, a seton has been passed through it also.

A quantity of dark colored fluid, similar to what came from the other lobe flowed out, immediately reducing the tumour, which was about the size of a hen's egg or rather larger, and some, but not much, bleeding followed.

5th Mo. 7th.—In two or three days after passing the seton, during which time a bloody oozing continued, the swelling, attended with soreness and redness returned, and it is at present of about its former size, but more solid, with some pain and stiffness about the back of the head and neck; but little constitutional excitement.

7th Mo. 1st.—The tumour being nearly gone, the seton was withdrawn.

A small nucleus, about the size of a walnut remains on the left side, and one about the size of a hazel nut only, on the right side. Scarcely any prominence of the neck appears, and no inconvenience is experienced.

8th Mo. 12th.—Continues well, no prominence of the neck apparent, and on examination a very small indurated nucleus only can be felt.

ART VII.—*On Fractures of the Os Femoris just above the Condyles.* By WILSON OVEREND, Esq. Surgeon to the Sheffield General Infirmary.

I am induced to offer a few remarks on fractures immediately above the Condyles of the Os Femoris, by the general want of success attendant upon the mode of treatment usually adopted in these cases.

The first case of the kind which came under my care, was in the person of a fine boy, twelve years of age, the son of a respectable tradesman in Sheffield—the injury being produced by his falling from a swing, at a considerable distance from the ground, upon the right knee.

The appearances of the limb, at first sight, were a considerable depression on the outer side of the thigh just above the external condyle, the right leg being drawn at an angle over the middle of the left leg, with a projecting point on the anterior part, immediately above the patella; which on examination was found to depend upon the extremity of the upper portion of the fractured bone having protruded through the crureus and rectus muscles, and producing so much pressure upon the integuments, as to render the greatest care necessary, to prevent what was now only a simple, from becoming a compound fracture. After careful and continued extension of the thigh,

one assistant fixing the upper part of the femur, and another extending the knee gradually, but steadily, from the body ; the protruding extremity of the bone was, after considerable difficulty, disentangled from the muscles. Thus far we were successful, but upon attempting to keep up extension by the leg, as has been directed by the highest surgical authority, I found that, although by these means, the fractured limb could be produced to the same length as the sound one, yet the deformity about the knee was such, that I was satisfied, that if this were to be our mode of treatment, the result could not be a fortunate one. This plan was therefore abandoned, and for the following reasons :—I found that when extension of the whole of the leg was kept up from the ankle, the gastrocnemii and popliteus muscles, by being put upon the stretch, drew down the lower portion of the fractured bone into the ham ; and, from this cause, would have prevented the fractured extremities from coming in apposition, even though the upper portion had remained in its proper situation. The means of obviating this difficulty appeared to be, by bringing the points of origin and insertion of these muscles, nearer to each other ; and thereby relaxing their fibres, so that the lower portion of the femur was no longer influenced by their action ; and when the limb was laid over a double inclined plane, by a little extension of the leg, that portion was made to rise nearly on a level with the upper part. An obstacle however here presented itself in the extremity of the upper portion of bone being elevated somewhat higher than its proper situation. This, of course, depended upon the action of the psoas and iliacus muscles ; and by flexing the body upon the thigh, this difficulty was obviated. Thus, by raising the body on the thigh, and placing the limb over a double inclined plane, at a proper angle, the extremities of the bone were brought in apposition ; the thigh was extended to the same length as the sound one ; and the patient, in six weeks, was allowed to leave his bed ; and in two more was walking about the streets without the aid of crutches, both legs being precisely the same length, with no eversion of the foot, and, in short, without any deformity whatever.

A second case of a similar character has since come under my care, in a labouring man thirty years of age ; in which the same mode of treatment has been attended with an equally successful result—and a third case under the care of a friend of mine has been also fortunate in its termination.

In mentioning the plan of treatment, which appears to me the best adapted to these cases, the difficulty of meeting with double inclined planes suitable for the case, has frequently been urged as an objection to its being put into general prac-

tice. To obviate which, I will describe, as clearly as I can, a very simple apparatus, which I have employed for these cases, as well as for fractures of the upper and middle third of the femur ; and which has fully answered my expectations.

I first measure the sound limb from the bend of the ham to the tuberosity of the ischium, and then have a piece of board cut, in length, about two inches more than this measurement, and in width, sufficient to support the pelvis, and both thighs. A small circular portion is cut out, to admit the buttock, and for the application of the urinal (vide fig. 1.) I next measure

FIG. 1.



from the bend of the ham to the heel ; and have a second piece cut of the same width as the former, but four inches longer than from the ham to the heel. The extremities being applied to each other, two longer and more slender pieces are provided to fix them at a determined angle. These being ready, the injured limb is raised, and flexed, with slight extension, until the fractured extremities are adapted to each other. The elevation is then taken, or the angle between the thigh, and the leg, which determines the angle at which the boards are to be fastened together—so that an instrument resembling figure 2

FIG. 2.



will result. When fixed together some holes should be bored in both portions for insertion of pegs, to enable you to steady and fix the limb more securely—in the upper piece, merely in the centre, as indicated by the black dots ; but in the lower, or that for the legs, both in the centre and at the sides ; and thereby affording an opportunity of keeping up steady extension, by applying one roller round the ancle, and another extending from thence round one of the legs on each side of the foot. Any common carpenter can construct this in ten minutes under the direction of a surgeon. It is scarcely necessary to state, that it must be padded before the patient is placed upon it.

Both limbs being placed over this double inclined plane, and the length of the upper piece being greater than from the ham to the tuberosity of the ischium, the weight of the pelvis (as the limbs hang by the hams,) (vide fig. 3.) keeps up

FIG. 3.



sufficient extension to counteract the efforts of the muscles ; and the pelvis is kept perfectly straight. In offering the foregoing remarks, I do not wish to arrogate to myself the credit of being the

first who has treated this species of fracture in the flexed position; but only to state the results of several cases, the management of which was totally at variance with that recommended in the most standard work of the day, on this subject.*

* Vide Sir A. Cooper's Work on Fractures and Dislocation.

MANCHESTER LYING-IN HOSPITAL.†

ART VIII.—*General Remarks on the best mode of securing the speedy expulsion of the Placenta.* By JOHN ROBERTSON, Esq. Surgeon to the above Institution.

THE subject of the present paper, being one upon which so much has been written, may perhaps be regarded as somewhat trite. Without denying the justice of this, I am nevertheless inclined to believe that it has not lost all its interest. The management of the placenta is the most common of all the operations that can be said to be attended with difficulty or danger. On this account it is the more entitled to frequent admission into the arena of professional discussion.

More women die of hæmorrhage, succeeding labour, than from all the other fatal causes of parturition together. But this is not its only important consequence: another of scarcely less moment is, that multitudes of women who recover readily from its immediate effects, and whose lives have even been in no actual danger, are yet in various degrees injured by it. This is shewn by symptoms that are often thought to be merely incidental to the puerpural state, as a somewhat sallow countenance, a quickened irritable pulse, flaccid mammæ, thin watery milk, a sickly flatulent stomach, irritability of temper, and a lingering recovery. Here I do not refer to extreme cases, where there is intense headach, febrile reaction, and all the train of symptoms which follow exhausting hæmorrhage, so well described by Dr. M. Hall, but to those of a slight description, which generally excite no particular notice.

Although the lying-in chamber has been reckoned a source of scandal, occasionally, in no small degree, trying to the reputation of the surgeon, it is unquestionably no less a place of privacy, where more mischief may be perpetrated or permitted than is likely to be either discovered or avowed. When instruments are employed, or any other operation is being performed for the purpose of hastening delivery, the bystanders are sure to watch with vigilance every step that is taken, and are acute and often malicious critics. But in these, as

† It may perhaps be thought desirable that I should state a few particulars concerning this great Charity. Few will be necessary in addition to those which Dr. Lyon has furnished in his sketch of the Medical Statistics of Manchester, which the reader will find at page 147, in the second number of this Journal. The Manchester Lying-in-Hospital was established in 1790. Although it still receives the

well as in the ordinary cases of childbirth, no sooner is the infant born than they are apt to imagine that difficulty and danger are over ; and are ready, in the bustle and rejoicing that ensue, to give the surgeon full credit for having satisfactorily done his part. Meanwhile, perhaps, the patient is suffering from a draining hæmorrhage ; and now, at the moment when he is lauded for his skill in conducting the labour, he may be about to fail in that very duty—the management of the placenta—for the performance of which, in nine cases out of ten, his presence in the lying-in chamber is alone necessary.

name of “ Hospital,” it is properly only a Lying-in Charity, as no in-patients have been admitted since 1814. The following Table exhibits the progressive increase that has taken place in the number of patients annually admitted since 1796, as well as the immense (what some, perhaps, may call overgrown) magnitude of its operations. The Register, previous to that date, contains no detailed report of patients.

Dates.	Pregnant married women admitted into the Hospital.	Ditto delivered at their own homes.	Out-patients in diseases peculiar to women and children	Admitted for Vaccination.	Total.
1796-7	124	580	129	—	833
1798	133	655	146	—	934
1799	177	623	253	—	1053
1800	192	852	99	—	1143
1801	164	874	426	—	1464
1802	99	785	320	—	1204
1803	120	748	374	—	1242
1804	157	871	33	875	1936
1805	89	754	23	1189	2055
1806	129	810	12	2222	3173
1807	114	851	13	1047	2025
1808	123	983	39	1353	2498
1809	138	1148	45	1545	2876
1810	88	887	55	1143	2173
1811	29	1112	44	1070	2255
1812	5	1148	39	1220	2412
1813	56	1251	51	1303	2661
1814	1	1253	21	951	2226
1815	—	1433	8	1030	2471
1816	—	1512	6	1787	3305
1817	—	2164	14	1408	3586
1818	—	1910	14	1273	3197
1819	—	2276	11	1487	3774
1820	—	2446	19	1046	3511
1821	—	2440	27	973	3440
1822	—	2654	30	1034	3718
1823	—	2706	47	872	3625
1824	—	2989	10	1263	4262
1825	—	3120	7	500	3627
1826	—	3443	11	551	4005
1827	—	3632	4	724	4360
1828	—	3739	16	416	4171
1829	—	4108	12	337	4457
1830	—	4356	23	524	4903
Total - -	1,938	61,113	2,381	29,143	94,575

The number of midwives regularly occupied in the duties of the Charity, is about *twenty-seven*. The following rules, with a copy of which each midwife is furnished, for her guidance, will supersede any remarks I might otherwise be disposed to

When I speak of the great fatality of hæmorrhage depending on retention of the placenta, I would be understood as alluding more particularly to cases occurring in the country, where skilful assistance is not to be readily obtained, and indeed is often not thought of till too late. Under these circumstances it has been my lot to witness several fatal instances, and to have heard of many others. It is true that few of the patients of this charity die of flooding after labour, a circumstance that is owing partly to the creditable skill of the midwives, and partly to one of the rules mentioned in the note below, which enjoins that when the placenta is not expelled within the hour, the surgeon is to be sent for. That many of the poor women however suffer, in

make, on the employment of this description of practitioners. As these rules have been found by experience to answer well the end for which they were originally drawn up, their publication may not be without interest to those connected with similar Charities. The midwives are, for the most part, middle-aged matrons: some of them possess much experience, and no mean skill. As a body, their practical knowledge and efficiency are highly respectable, which is owing doubtless, in a considerable degree, to the obstetrical instructions which they receive from time to time, and especially those of their present lecturer, the Senior Surgeon in Ordinary, Mr. Radford, whose judicious mode of teaching, and diligence in discharging that duty, deserve the best thanks of the Trustees.

INSTRUCTIONS TO THE MIDWIVES.

1st.—On being summoned to a patient in labour, should the midwife herself be unable to attend, she is on no account to transfer the patient to any other practitioner, except one of the midwives regularly attached to the Hospital.

2nd.—The midwife is not to interfere in any but *natural presentations*. In presentations of the face, arm, shoulder, and navel-string; in presentations of the breech and feet in a first child, and in flooding, and convulsions during labour, the surgeon in ordinary for the week, and district, is to be immediately sent for.

3rd.—When the placenta, after labour, is not expelled in an hour, the surgeon is then to be sent for; but should flooding come on, he is to be sent for without delay.

4th.—In requesting the aid of a surgeon in cases of difficulty, the midwife is to send to him one of the printed cards, with which she is furnished, stating the nature of the case. When such card is not sent, the surgeon is authorized to refuse his attendance.

5th.—Whenever assistance is required, the midwife is to call in the surgeon whose business it is to attend, and on no account to request or allow any other medical practitioner, or apprentice to be sent for. The midwife transgressing this rule, will be expelled the Hospital.

6th.—The midwife is to continue to visit the patient for three days at least, after delivery, or longer should the case require. She is, however, forbidden to prescribe laudanum or any other medicines except a laxative. Should dangerous or distressing symptoms arise, the surgeon is to receive notice of the same without delay.

7th.—It is the duty of the midwife to see that the surgeon for the week is informed of any cases of flooding previous to labour, or expected miscarriage, among those patients who have delivered their letters to her.

8th.—Further, it is the midwife's duty to remind the patient, on recovery, that she is to return thanks at the Hospital; and that if her infant have any deformity, or misformation, as hare-lip, club-foot, imperforate anus, or the like, it is to be carried to the surgeon in whose district, and week, the delivery occurred, for his inspection and advice.

9th.—It is expected that the midwife will, in every instance, endeavour to persuade her patients to take their infants to the Hospital to be vaccinated when they are two months old. In order the better to promote this practice, the midwife is to furnish her patients with *vaccination tickets*, which they are to present at the Hospital on taking their infants thither, and for every dozen of such tickets, thus delivered into the hands of the apothecary, the midwife will receive the sum of two shillings.

10th.—It being highly desirable to obtain an accurate return of the results of labours attended by the midwives, the midwife is in every instance to mark or write in her letter the *particulars* of the labour *before she leaves the patient*. On proof being obtained of neglect of this duty, the midwife will forfeit her fee for the case.

11th.—The letters duly and correctly filled up, as above-mentioned, are to be sent to the Hospital every Friday afternoon, not later than six o'clock. No letters can be received by the Apothecary unless they are delivered in, according to the provision of this rule, without an order to that effect, obtained by the midwife from the Quarterly Board.

12th.—As the surgeons agree to hold an annual examination of the midwives, of which due notice will in each instance be given, the midwife will consider herself bound to attend on the occasion; as well as to attend the gratuitous lectures on midwifery, that are delivered from time to time at the Hospital.

various degrees, from this description of hæmorrhage, I have had abundant opportunities of witnessing.

We may generally foresee, in a measure, from the nature of the labour, whether or not there will be difficulty in managing the placenta. In the majority of cases, the child is expelled by the uniform contractions of the uterus. In these, the pain which expels the last portion of the fœtus either separates the placenta, and throws it into the vagina, or when this does not happen produces so great a diminution of the uterine cavity as to bring the bulk of the placenta in contact with the cervix—a position which very soon, if there be no morbid adhesion to the uterus, insures its expulsion.

Were this the only kind of labour to be met with, the management of the placenta would be attended with little difficulty; but there are other kinds which have a less satisfactory progress, particularly in the latter stages. In these the pains are not regular and expulsive, but altogether irregular: perhaps they are constant and tormenting, or they come on at long and varying intervals. On examination, *per vaginam*, it is found that the uterus is either inert, or, more frequently, that it contracts partially, causing the head not to descend, but to vacillate from side to side, as if the contractions shifted rapidly from one part of the uterus to another, and acted successively upon different parts of the body of the child. Sometimes the head advances and retreats alternately, even while the pains are prolonged, severe, and apparently expulsive. Meanwhile, in general, some of the neighbouring parts are affected with cramps, as the muscles of the loins, of the hips and of the abdomen; or they attack the rectum and sphincter ani, the perineum and vagina, and sometimes the neck of the bladder.

These irregular pains deserve little notice when they are confined to the early stages of labour, that is to say, to the period before the full dilatation of the os uteri; but when they are present, subsequent to this, they are of consequence, as indicating a spasmodic tendency in the uterus, which may, and often does, interfere with the natural separation and expulsion of the placenta. It is in this description of labour that the delivery of the body of the child is often extremely tardy. After the birth of the head, it is sometimes ten or fifteen minutes before the shoulders escape, and again as long ere the breech and feet come forth. In these circumstances it was formerly the usual practice to expedite delivery by pulling at the child; and still, I am sorry to say, a few of the more ignorant or less conscientious of our midwives are apt to court the applause of the spectators by the rapid and seemingly adroit manner in which they proceed. Irregular contraction of the uterus is the almost certain consequence of such a procedure. The uterus, as yet of large size, when thus suddenly emptied of its chief contents, or in other words of its natural stimulus to proper contraction, falls together, and becomes irritated to some form of irregular action. It must be confessed, however, that the same kind of uterine spasm will occasionally follow the above description of labour in the best hands, and embarrass the practitioner in conducting the delivery of the afterbirth.

It has been made a question of late, whether such partial contraction of the body of the uterus as may form a stricture higher than the cervix really does happen. I should imagine that those who doubt this have been so fortunate as seldom to have been under the necessity of extracting the placenta.

The most common form of spasmodic contraction, (for it is both multiform and variable,) is simple stricture, like what one may imagine would be produced by tying a piece of broad tape round the uterus. This takes place sometimes immediately above the cervix, but much oftener it is as high as just to enclose the entire placenta; or a portion of it only, the stricture embracing another portion: or there may be two circular contractions, the one above the other; so that when the hand of the operator has overcome one he soon meets with a second.

What I would call the funnel-shaped contraction, is another variety that frequently occurs; in which there is a general circular spasm, from the cervix upwards, producing a remarkable elongation of the womb, whose fundus may be felt, a broad firm tumour, quite in the epigastrium.

It is said by anatomists that few or no fibres are to be detected in the cervix. Whatever may be thought of this opinion, there can be no question that the cervix is sometimes the seat of spasmodic circular contraction. I do not allude to those transient, though powerful contractions, which are experienced in attempting to pass the hand into the womb in the operation of turning, but to spasm of a more permanent description; such as was found in the following case.

In January, 1830, I was desired to attend a charity patient under the care of Mrs. Buckley, who had been some hours in labour. On making examination, I found the hand protruded from the vagina, and the arm much swollen. The os uteri was firm and not very dilatable. As the woman was a vigorous subject, and had regular, though not strong pains, I bled her to about a pint, and administered forty drops of laudanum. In attempting the introduction of my hand I experienced much resistance. The whole of the cervix uteri (by which I would be understood as meaning two inches or rather more of the space above the lip of the womb) gave me the impression of so great a degree of thickness, that I withdrew my hand, and grasped it between the thumb and fingers, in order to be assured that the thickening did not depend on disease. I found it was a spasmodic contraction. It seemed as if the wall of the uterus above the cervix had been drawn down and united with it to form a firm thick ring. I now had the bandage on the arm loosened, and let about another pint of blood flow, and gave forty drops more of laudanum. In a short time the woman was delivered without much difficulty, of a living child. Facts analogous to this, such as the powerful retention within the uterus, sometimes of the whole, and sometimes only of the upper segment of the head in footling cases, prove that, however anatomists may fail in discovering fibres in the cervix, it may nevertheless under particular circumstances, take on continued spasmodic action during, and doubtless also, after delivery.

In regard to the body of the uterus, it is not after the delivery of the child, only, that it may become irregularly contracted. After the head and shoulders were born, and while the breech and feet remained in the vagina and uterus, I have noticed the occurrence of one or two sharp pains which proved not to be expulsive; and on laying my hand on the abdomen, have discovered that the fundus uteri had become separated from the lower portion by a circular contraction, and formed a tumour high in the abdomen.

It is not uncommon for the expulsion of the last portion of the foetus to be accompanied by a profuse gush of blood. In the case of a thin delicate woman I witnessed such a discharge prove fatal, without there being further hæmorrhage. In cases of this description, it is probable that a portion of the placenta has been detached by a partial contraction occurring during the birth of the child, after the uterus was, in part, emptied of its contents.*

It is nearly a general opinion, that a free discharge of blood immediately following delivery is of little or no consequence to the woman. They who think thus, argue that, as the uterine veins contain a large quantity of blood, which, after the expulsion of the foetus and secundines, and the consequent sudden permanent contraction of the womb, is forced into the maternal system, and becomes a mere superfluous addition, it cannot therefore be injurious, should it happen to flow off by the vagina. In that case the sanguinous system of the mother remains as before. Moreover, say they, it is plain from facts, that this *a priori* reasoning is correct; since many women have copious hæmorrhage after labour, who yet are, in no manifest degree, injured by it.

This view of the subject is by no means sound; nor in the issue, safe; as it naturally tends to lull the young practitioner into mischievous security, in circumstances where watchfulness and prompti-

* The following opinions of Mr. C. Bell, deserve notice. "From attention to the muscular structure of the uterus" says he "I have been led to conclude, that in common cases of flooding during labour, the hæmorrhage is not accidental, in any other meaning of the term than as it proceeds from the place of the uterus, to which the placenta is accidentally attached; that the placenta cannot be partially separated if it be attached in a regular circle to the fundus of the uterus; and that flooding on the commencement and during the progress of labour, is owing to an irregularity in the shape and attachment of the placenta" This *a priori* reasoning is ingenious and is, perhaps, confirmed to a certain extent by experience. But general rules ought never to be rigidly applied in practice. I venture to say that there are numerous instances, where the placenta is attached much lower than to the fundus of the uterus, which yet terminate without the occurrence of hæmorrhage. Indeed were *position*, of the kind here alluded to, in one instance a cause of flooding, I do not see how it should not be a cause in every similar instance. I am inclined to think that the placenta is rarely attached in a regular circle to the fundus, but rather on one side, partly both to the fundus and the body of the uterus. Hence, in the latter stages of labour, when the head and shoulders are born, and the inferior parts of the child remain in the uterus, should circular contraction of the body of the uterus occur near to the fundus, it will readily detach a portion of the placenta, and cause, what we know does often happen, the expulsion of the child to be immediately followed by flooding.

tude are especially required. On the other hand, I admit that over anxiety, on the occurrence of every slight discharge of blood, might lead to an opposite evil—rash and unnecessary attempts to extract the placenta.

What, I would ask, is the condition of the maternal system immediately after parturition? The uterine veins which supplied the wants of the foetus are closed, because the child has been removed from its inward habitation. But is no external provision now to be made for its wants? Do not the swollen breasts of the mother require, and actually receive, more blood than was at any single moment contained in the veins of the gravid uterus? Further, it is to be remarked, that flooding after labour is not a natural, but an accidental circumstance. At the full period of gestation, the connexion of the ovum with the uterus has some analogy to that of the ripe nut with its husk, or the ripe bean with its pod. The placenta has become more dense and firm than it was at an earlier period, and contains, in relation to its size, less blood. Its pilous or uterine surface is now more fibrous; and occasionally portions of it, and even, though very rarely, the whole of the placental mass, is hard and calcareous—a diminution of vascularity which has evident reference to its approaching separation. Hence, in numerous cases of easy, unembarrassed labour, the separation and expulsion of the placenta is unattended by any discharge of blood whatever; and in other instances, where there is some degree of hæmorrhage, it probably flows from the vessels of the placenta only; and not from the veins of the uterus.

Again, it is fallacious to imagine that hæmorrhage occurring before the expulsion of the placenta, must necessarily be only the blood contained in the uterine veins, and not blood from the arterial system of the mother. It is to be remembered, that the great uterine veins are chiefly confined to that part of the uterus which corresponds to the placenta; and that, so long as the placenta remains generally attached, and the uterus uncontracted, whatever hæmorrhage there is, (not purely placental,) must flow *directly* from the uterine veins; but still in *a continued stream*, though a circuitous one, from the uterine arteries of the mother. On this account a free continued discharge of blood, before the expulsion of the placenta, soon tells on the system: on the other hand the hæmorrhage which, *cæteris paribus*, produces the least sensible effect, is *that* which is speedily followed by complete contraction of the uterus—an event that in a great measure closes the uterine arteries, in the same moment that it constricts the uterine veins.

Not less fallacious is the notion, that because the patient escapes syncope, the quantity of hæmorrhage, whatever it may be, can be of no great importance. Few women would faint were sixteen or twenty ounces of blood drawn from the arm, when lying in the recumbent posture; and yet who will venture to say that such abstraction of blood would not, upon the whole, produce injurious effects? In nine cases out of ten, its consequences would much resemble those of the description of flooding to which I have been alluding, namely,

langour, and increased mobility of the nervous system, more or less, according to the strength of the individual.*

It has been a good deal contested in regard to what length of time the placenta ought to be allowed to adhere, when the uterus shews no disposition to expel it. Smellie advises its immediate extraction by pulling at the funis, and by the introduction of the hand into the uterus, a mode of practice which would seem to have been fearfully common in his day. Dr. Hunter, as is well known, impressed with the evil consequences of such a principle of practice, went to an opposite extreme, and would leave in this matter all to nature. He found that this extreme was equally hazardous to the patient, and in his latter days he abandoned his optimism. Denman has, however, in the latest edition of his admirable work on midwifery, laid down principles for the management of the placenta, which, in reference to this point, approach those of Hunter. "If," says he, "the placenta be not expelled at the end of four hours from the birth of the child, it is generally wise to determine upon extracting it." In cases, again, where the placenta is to be felt in the vagina, he thinks it best not to be in a hurry; but to allow it to be excluded by the womb. In the case of a lady of the highest rank, to which he was called in consultation, "we suffered," says he, "the placenta to remain

* It might not be altogether fruitless to attempt to discover how it happens, that so many women, who, under ordinary circumstances, enjoy good health, become feeble and indisposed during the puerpural state. I have already hinted at what are called trifling losses of blood, as a frequent cause of mobility of the nervous system, and general debility. I am inclined to think that the universal adoption of a diet, composed of fluid substances, chiefly gruel, tea, and broths, is a still more important cause, inasmuch as it is a more general one. It is true that some women require a low and rather innutritious diet, for many days after delivery; and that most women, in the same case, are injured by rich and stimulating food. Besides, I readily grant that a state of complete inaction, such as is properly observed for several days after labour, does not require, and cannot admit of *full diet*. With these admissions to guard myself from misconstruction, I may state my firm persuasion, founded on observation, that the regimen of the lying in chamber which is at present in vogue, ought to be altered or considerably modified. In all ranks of life, speaking generally, the patient, up to the hour of labour, has been living on solid food; but from the time of putting her to bed till the expiration of six or eight days at least;—often till after a considerably later period, the food is of a totally different description, being eminently fitted (if such were the design) for irritating and deranging the *primæ viæ*. The surprising quantities of gruel, broths, and jellies, with which the stomachs of some patients are deluged in the course of a single day and night, are scarcely to be credited without actual observation. Of course I do not mention these articles as if they were improper to be used in the lying-in chamber; but my opinion is, that while the diet ought to be free from whatever the patient knows will *load or disagree* with her stomach, it should, upon the whole, differ less in *kind* than in *quantity* from what she has been ordinarily accustomed to.

In addition to errors in diet, I cannot help thinking that too *constant* and *long-continued* confinement to bed aids in producing the kind of constitutional disturbance to which I have alluded. I find it of great advantage to have the patient, from the first, removed from bed to a sofa, for a number of hours daily. Here she reclines, under a light covering, and while the recumbent position is carefully observed, the enervating effects that result from lying in bed are obviated. The change, to the patient, is not more salutary than it is agreeable.

for twenty-four hours before it was extracted, but there was no hæmorrhage, and the part of the placenta into which the funis was inserted was perceptible." The rule of Dr. Denman, will be followed by few, on account of the length of delay which it enjoins. As his book however, is in the hands of so many of the profession, it may furnish the timid with a plausible excuse for absurd or dangerous procrastination. All the best writers are now agreed, that when the placenta is retained for the space of an hour, it is generally right to take measures for securing its expulsion. It may be considered therefore as a point settled, that except when there is flooding, the placenta is not to be extracted by introducing the hand, during the first hour after the delivery of the child; but that, in the course of the second hour, if the uterus remain inert, extraction is to be performed. It must, under all circumstances however, be extremely desirable, to avoid such an operation. I am persuaded that, where the placenta does not morbidly adhere to the uterus—an accident which is by no means so common as some writers would have us to believe—extraction may, in nearly every case, be avoided; and effective uterine action secured within half an hour after the birth of the foetus, and generally within half that time.*

As the method I have now for several years pursued, to secure the speedy expulsion of the placenta, differs little *apparently*, although I cannot but think *materially*, from that which has been advised by our best writers, I shall briefly state how I came to adopt it. In the course of conversation with my friend and colleague Mr. Fawdington, I chanced to remark to him that I suspected I had in several instances brought on hour-glass contraction of the uterus, by rubbing and pressing with my hand on the abdomen, immediately above the pubis, with the view of expediting the expulsion of the secundines. In reply he stated that he, by observing a certain mode of manipulation, scarcely ever experienced trouble with tediously retained placenta. That his mode consisted in pressing on the abdomen, a short time after the separation of the child, so as to place the hollow of the hand upon the fundus uteri, which was to be gently but perseveringly pressed, and grasped, by frequently moving the fingers. This soon excites shortening or subsidence of the uterus; and in due time expulsive action, while the position of the operator's hand enables him to *command* the uterus, (a most important circumstance,) should it manifest a disposition to expand—a movement which necessarily accompanies any irregular contraction. This rule, the application of which I shall afterwards more fully describe, I have found to be of the utmost value

* The mere non-expulsion of the placenta, however long such a state may continue, affords no certain indication that there is morbid adhesion. When the uterus has once and again, fairly and regularly *contracted upon the placenta*, (generally expelling clots at each contraction,) which yet is not thrown off or is only partially detached; then, and only then, are we warranted in concluding that the placenta is *probably* morbidly adherent to the uterus. Retention of the placenta, without or with flooding, may and does much oftener depend on inaction, or on irregular contraction of the uterus, than on the effects of previous inflammation.

in practice. A slight consideration of the muscular mechanism of the uterus will serve to shew, that if friction be applicable as a means of hastening the delivery of the secundines, it ought to be applied in accordance with this rule, and not in the way usually recommended—that is, by the open hand over the fore part or body of the uterus.

In looking at Hunter's plates, illustrative of the muscularity of the gravid uterus, with the view of tracing the course of the fibres, we observe. 1st. On the inner surface of the fundus two pretty distinctly marked circular fasciculi of fibres, each having a fallopian tube for its centre ; and at the middle of the fundus the two orders of fibres becoming intimately united or interwoven. 2. Fasciculi running circularly, and somewhat obliquely, round the womb. These circular fibres more distinctly marked a little higher than the cervix.* 3. The cervix uteri having many branching rugæ but destitute of any visible muscular fibres.

In addition to these views from Dr. Hunter, Mr. Bell describes the muscularity of the outer surface thus. 1st. A layer of fibres which covers the upper segment of the womb ; “ the fibres arise from the round ligaments ; and regularly diverging spread over the fundus, until they unite and form the outermost stratum of the muscular substance of the uterus.” 2. “ After making sections of the womb in different directions,” says Mr. Bell, “ I have no hesitation in saying that, towards the fundus, the circular fibres prevail ; that, towards the orifice, the longitudinal fibres are most apparent ; and that, on the whole, the most common course of the fibres is from the fundus towards the orifice.” The same author also describes a set of fibres on the internal surface of the womb ; they commence in the fundus, and having a course at first in some degree vortiginous, descend towards the orifice of the uterus.

Such being the muscular mechanism of the uterus, according to the best authorities who treat on this obscure point of anatomy, we have hence suggested to us three indications of a practical kind, in reference to the management of the placenta : 1st. That in order to be immediately secured, on the birth of the child, against irregular contraction of the uterus, it is necessary that the longitudinal fibres be well contracted—in other words that the fundus subside as low as may be. 2. That in attempting to accelerate the expulsion of the placenta, we are to avoid whatever may excite contraction in the body of the uterus, while the fundus remains relaxed ; such, for example, as friction *immediately above* the pubis ; moving the funis from side to side when it is on the stretch ; and irritation of the orifice with the finger. 3. That by endeavouring to excite contraction in the fundus, we most effectually secure the uniform contraction of the whole viscus.

With these indications kept in view, I shall now proceed to state somewhat more in detail, the practice I have found to be most suc-

* Plate xiv. Figure 1.

cessful in the ordinary management of the placenta. It is to be remembered that my remarks relate to natural cases, and have no direct reference to such as are complicated with morbid conditions of the placenta and uterus.

When the child's head is passing the *os externum*, its exit ought to be retarded or rather regulated by the hand. When the head is suffered to be suddenly projected into the world, it draws the body after it too quickly to allow the uterus time for accommodating itself to the altered bulk of its contents; and thus the ensuing stage, namely, the birth of the shoulders, is apt to be rendered tardy, from the uterus taking on a spasmodic, instead of a regular contraction. No principle of practice is more universally known, and better established, than that the delivery ought not to be hurried; that in fact the two latter stages (for the expulsion of the shoulders and of the breech and legs, ordinarily requires two, and sometimes even three distinct efforts,) should be finished solely by the uterine action; yet I have reason to know that, from the want of patience, more than from ignorance, this indispensable rule is frequently violated. The consequences are, pretty uniformly, irregular uterine contraction: retained placenta; and generally more or less of hæmorrhage. Although the uterus ought to be the sole *direct* agent in effecting the delivery, nevertheless, in cases where the intervals between the latter stages are unusually long, it is of much use to manipulate the fundus of the uterus; by which we hasten delivery, and, at the same time, secure a uniform contraction, and proper subsidence of the uterus; and, in the issue, a speedy expulsion of the secundines. I am fully satisfied that, in all cases of labour attended with cramps in the neighbourhood of the uterus, it ought to be a rule of practice, that towards the termination of labour, the practitioner should keep his left hand over the fundus of the uterus, in order that, if need be, he may apply pressure and friction. It is well also, in these circumstances, to make the patient turn on her back: the uterus being now partially emptied, no longer fills the abdomen, and consequently has ceased to receive support from its relaxed parietes; therefore, when the patient lies on her side, the uterus falls downwards and forwards, inclining from the line of axis; but when she has turned on her back, it rests on the viscera, and is more readily supported and manipulated.

When the funis has been tied, and the child removed—operations which are generally over in about three minutes after the birth, it becomes the practitioner to ascertain the state of the utero-abdominal tumour; as also whether the secundines have been detached or remain adherent. In order to this latter end, he is to tighten the funis with one hand, while he passes the forefinger of the other along it as a guide. If the insertion of the funis be near the *os externum*, or just within reach of the finger, he will generally find the utero-abdominal tumour well contracted; indicating that the secundines are either detached or are likely soon to be so; and that nothing in the way of interference is to be attempted, unless it be to support the uterus evenly, in the line of axis, by the hand applied over the

fundus. In the majority of cases, the uterus, after a few minutes' repose, will spontaneously contract, and expel the secundines; sometimes by a single effort; at other times the first contraction separates the placenta, and a second expels it. When the finger, passed along the funis, fails in readily finding its insertion, the probability is that the placenta is still adherent throughout. Nevertheless there is no immediate need for interference: we are merely to place the hand over the fundus, and wait for the natural expulsive contraction. Should there be no contraction by the end of ten or fifteen minutes, I am in the habit of gently grasping the fundus of the womb, and working it, taking care that it is evenly grasped by the hand; that is to say, that the friction is applied to the back part of the fundus equally as to the front. The effect of this process is often immediate: although at the time of applying the hand, the uterus may have been flaccid, scarcely forming a defined tumour, it becomes, under the employment of friction, firm and even hard, and subsides in the abdomen, thereby carrying the mass of the placenta into contact with the cervix. On staying the application of the rubbing, the uterus will often relax; and again, on applying the hand, contract: and this alternate relaxation and contraction will sometimes continue for many minutes. It ought to be remarked, that the mere gathering of the uterus round the placenta, in such a manner as to form a firm irregular tumour in the abdomen, has no effect in detaching it. This sometimes happens when the fundus has little disposition to regular, permanent contraction; and may even, if the pressure of the hand be withdrawn, be followed by relaxation, and irregular action. This spurious contraction of the uterus to which I allude, would seem to be owing to the action of the longitudinal fibres, rather than of the concentric muscles; as the latter, when brought fairly into action, *necessarily* detach the placenta, by contracting that portion of the uterine surface to which it adheres. On steadily continuing the manipulation, however, and, at the same time, cautiously lightening the funis, efficient uterine action will ensue.

The placenta having been cast off, the utero-abdominal tumour will now be discovered firmly contracted, and, generally, of the size of the fist: the degree of contraction, however, and consequently of size, varies considerably in different cases. In a few minutes afterwards, if the hand be laid on the abdomen, the uterus will be found to have somewhat expanded itself—still firm to the feeling, but less so than it was immediately after the expulsion of the secundines. In rarer cases the expansion is so great, that a defined tumour is no longer to be felt—a condition of the uterus which is sure to be followed by hæmorrhage, should any thing occur greatly to accelerate the circulation. In every instance, the state of the uterine tumour ought to be watched, by the hand being suffered to remain in contact with it, for a few minutes previous to putting on the compress and bandage.

When the expansion is so great as to be attended with hæmorrhage, or indeed, without this occurrence, when there seems to be no disposition in the womb to gather itself up, a little persevering manipulation will ultimately secure contraction. It is of importance to

be aware, that the uterus may be *commanded* by the hand with much facility. Were this fact known, and acted upon, in floodings subsequent to the expulsion of the placenta, it would seldom be found necessary to introduce the hand into the uterus; to deluge the patient by the affusion of cold water; or to have recourse to the other expedients which, together with these, have hitherto been deemed requisite, (and are confessedly powerful means,) on such emergencies.

Although the history of the management of the placenta I have now presented, is in accordance with my general experience, the following case may be given as an exception: Mrs. Perry, thin and delicate; in labour of her second child. There was rather more than common rigidity of the os uteri; but on its dilatation, the child was born in an easy natural manner; and after a few minutes had elapsed, the placenta was expelled. Having my hand on the abdomen, at the moment when the secundines were ejected, I perceived that the uterus contracted to a very small bulk; yet there followed immediately a profuse and alarming hæmorrhage. It was obvious to my feeling, that the left side of the uterus was more contracted than the other. Cold water was dashed upon the belly and thighs, and this, with perhaps the occurrence of some degree of faintness, abated the flooding. The uterus now became gradually larger and softer, and as its expansion was soon considerable, I became apprehensive lest it might be filling with coagula. I now employed friction: it became firmer, but with little diminution in bulk. No active hæmorrhage followed; nor could I learn that coagula were expelled afterwards. The only conclusion which I could draw was, that a small portion of the uterus, to which the placenta had been attached, must have remained so far relaxed, notwithstanding the generally contracted state of the uterus, as to allow blood to flow through one or more of the uterine veins.

Apparently, having some resemblance to the above, is a case reported by Dr. Gooch, with the view of illustrating “a peculiar form of hæmorrhage:” The resemblance, however, will be found, I think, to be rather apparent than real. As Dr. Gooch’s reasoning respecting it is to me unsatisfactory; and as the case is a singularly interesting one, I incline to believe that a very brief analysis of it, and of the inferences he has drawn, may place, in a clearer point of view, the correctness of some of the opinions I have advanced in this paper. Dr. Gooch wishes to prove that, although the contraction of the uterus after delivery prevents hæmorrhage, by occasioning a sufficient closure of the blood vessels to resist the ordinary force of the circulation; yet that, when the force of the circulation is extraordinarily great, it will overcome the ordinary closure of the orifices, and produce flooding.

The case is as follows:—“April 10, 1815, I delivered Mrs. S. W. of her second child. For many hours before the accession of labour, she was flushed, and had a very full quick pulse. Abstinence from meat, wine, and warm drinks, a cool room, and a saline purgative, diminished, but did not remove, this state of the circulation, which continued in a considerable degree when the child was

born. It was expelled very gradually ; and, after the removal of the placenta, the uterus felt, in the hypogastrium, contracted in the ordinary degree : nevertheless *about twenty minutes afterwards*, there came on one of the most frightful hæmorrhages I ever witnessed. By the introduction of the hand, and the application of cold, however, it was speedily arrested.”* In somewhat more than a year afterwards, he again attended the same patient in labour. He found her “ with a red face, and a throbbing pulse.” The delivery was natural. “ I cut the chord,” he observes, “ and felt *the uterus contracting in the usual degree* ; yet *a few minutes afterwards*, the blood burst out with prodigious impetuosity, &c. The patient again did well. In this instance the hæmorrhage *preceded* the removal but not the separation of the placenta, which was found, on introducing the hand to check the flooding, lying in the vagina. In her next pregnancy, the lady was put on low diet, and made to take purgatives. On this occasion, the labour was over before Dr. Gooch arrived ; but the surgeon who officiated reported, that for two days previous to her confinement, there had been “ the old heated skin, and hurried circulation ; though in a far less degree.” The labour came on : the child was gradually expelled : and, after the placenta had separated and was removed, the surgeon assured Dr. G. that he had put his hand on the abdomen, and had seldom felt the uterus more contracted so soon after delivery ; yet *within a few minutes* there came on a flooding. It was however much less than it had been in former labours. In process of time the lady was again pregnant, and was put under the same treatment, with this addition, that she was bled twice in the course of the fortnight before her confinement. The labour came on : the pulse was found now to be soft and slow ; no flooding or faintness followed.

That disturbance of the circulation plays an important part in uterine hæmorrhage ; and that it consequently deserves “ the especial attention of practitioners,” is most true. But I do not see that the details establish the proposition which it is the Doctor’s object to prove, namely, that profuse hæmorrhage may take place, though the uterus be “ contracted in the degree which commonly indicates security.” Some of the facts of the case I have put in italics, on purpose that they may not be overlooked by the reader. To me these particulars render it *probable at least*, that the uterus had, in every instance, become *expanded* when flooding took place. In the first instance adduced the uterus was felt contracted ; but it was not till “ about *twenty minutes afterwards*,” that flooding commenced. Now no one will infer from the details of the case, that Dr. G. had his hand over the uterus during these twenty minutes ; or that, in fact, he could speak at all in regard to its state of contraction, at the moment when the hæmorrhage burst forth. After delivery on the second occasion, the uterus was well contracted ; and it was not till “ *a few minutes*”

* An account of some of the most important diseases peculiar to women, by Robert Gooch, M. D. 1829. p. 346.

after this was ascertained, that “the blood burst out with prodigious impetuosity.” Again, after the third labour, the flooding which came on, occurred “*within a few minutes*” after the uterus had been felt in a perfectly contracted state. In neither of these instances does it appear that the condition of the uterus, at the commencement of the flooding, was known. Indeed, from incidental remarks concerning the hæmorrhage which occurred in the first labour, introduced by Dr. G. towards the close of the chapter, when speaking of the efficacy of the cold affusion as a remedy in hæmorrhage after delivery, I am led to conclude that the uterus, though well contracted after the removal of the placenta, was *actually* relaxed and expanded when the flooding came on. His words are, “The first time I attended this lady, after the violence of the hæmorrhage was over, although the abdomen was covered with pounded ice, it returned again and again, slightly in degree, yet sufficiently, in the debilitated state of the patient, to produce alarming recurrences of faintness. The uterus too, which *had become* firm and distinct, became so soft that it could no longer be felt,” &c. From this account I infer, that after the violence of the flooding was over, the uterus, which was found to be relaxed, “*had become* firm and distinct” under the influence of the pounded ice; and that it again became so soft as no longer to be felt, at the time the slighter floodings were taking place. Besides this, Dr. Gooch informs us that the hæmorrhage after the first and second labours was checked by, among other means, “the introduction of the hand” into the uterus—a manœuvre which, it appears to me, could not have been performed if the uterus, at the time, had been contracted “in the ordinary degree.”

Upon the whole, I think it clear that, if Dr. Gooch had operated in each of the three instances with his hand steadily on the fundus of the uterus, from the moment the child was expelled, till the period of flooding had passed, he might have *commanded* the uterus, *i. e.* have kept it in a state of contraction, sufficient to resist the force of the circulation, great as that was. In regard to the fact of there being no occurrence of flooding after the fourth labour, when the circulation was reduced to a low ebb, it is not very surprising. On that occasion the power of the arterial system was too feeble to have forced the blood through the uterine veins, even had there occurred an unusual degree of expansion of the uterus. It is probable, however, that no such relaxation took place. The disposition in the uterus to become relaxed on the former occasions was perhaps owing, in a great degree, to dilatation of the uterine veins, and consequent extension of the parietes of the uterus, produced by the inordinate force of the uterine arteries. I gladly refer the reader to Dr. Gooch's interesting volume, for the full details of the case upon which I have taken the liberty of commenting. From one or two of his practical directions for the suppression of flooding, I am strongly disposed to dissent.

The following case presents another exception to the usual state of the uterus after delivery, different from those I have mentioned. In May 1829, I was called to a soldier's wife, who was apparently sink-

ing from hæmorrhage during labour. I was informed that she had been flooding more or less for six days, during several of which she was on the march. In figure she was stout and muscular ; and she might be 30 years of age ; her countenance was perfectly cadaverous ; there was constant jactitation ; and the pulse was extremely feeble, and too rapid to be distinctly counted. There had been, properly, no hæmorrhage for several hours, though there was still some ichorous draining. When questioned, she answered faintly but coherently. On making an examination, I found the placenta presenting at the os uteri, which was considerably dilated. On finding that a practitioner, who had been for a number of hours in attendance, had assiduously administered cordials and stimulants, I recommended immediate delivery, as delay was not likely to be of use. Circumstances unfortunately hindered us from attempting the operation of transfusion, which at all events would have been justifiable in such a case. Delivery, by turning, was effected with facility, and without being accompanied or followed by any hæmorrhage whatever. The placenta was found detached, and was brought away ; but the uterus shewed no disposition to contract. It lay flaccid in the abdomen. I introduced my hand within it ; and at the same time applied friction externally, but without effect ; it evinced no contractile tendency more than if it had been a linen bag. In a few minutes afterwards, the woman expired.

Here no kind of stimulation was capable of exciting the uterus ; yet in other cases of exhaustion from hæmorrhage, ending fatally too, I have found the uterus full of energy. The torpor in this case was probably owing to the hæmorrhage having been slow and continued ; and having thereby produced, in a constitution of great natural tenacity of life, gradual but *complete* exhaustion.

Every one who has much experience in the practice of midwifery, must be aware of the very different consequences which result from a sudden profuse hæmorrhage, and from that which has been less copious, but longer continued and constant. The apparent effects—for example raving or frequent faintings—may be the same in both cases ; but the state of the patients, with respect to the chances of recovery, is very different.

ART. IX.—*Observations and Experiments concerning Molecular Irritation of the Lungs as one source of Tubercular Consumption; and on Spinners' Phthisis.* By JAMES PHILLIPS KAY, M. D. Physician to the Ardwick and Ancoats Dispensary, Manchester.

THE researches of modern pathologists have discovered that tubercles are produced, in the various tissues in which they occur, by secretion, and that they are therefore eliminated by the minute vessels of the surrounding structure. Tubercles are very seldom found in infants which have died soon after birth; and though Orfila had seen them in some rare cases in the foetus, Velpeau* and Breschet (who has enjoyed ample opportunities of investigation at the Hospital of Enfants Trouvés at Paris) had very frequently examined the foetus without discovering them. Dr. Denis affirms that they are not to be discovered in the bodies of children during the first months of infancy. To this, however, some exceptions arise, from the influence of the probable exciting causes of this morbid deposition.

Since the tubercles are produced by some action of the secernent vessels of the surrounding structure, it becomes of consequence to determine whether that action resembles any of those abnormal vascular motions which are classed under the names of inflammation, irritation, congestion, &c. or whether it is of a specific and peculiar nature. The practical results depending on this investigation would be momentous, even were they confined to the determination of the question concerning the origin and prevention of Phthisis; but an intelligent observer will perceive that many most important inquiries relating to the origin, progress, and treatment of many other morbid structures are involved in this, and that its solution must issue in illustrating with much reflected light the obscure subject of the influence of certain constitutional phases on the production of disease.

Acute inflammation often appears to be the first step in a series of morbid actions, which occasion organic changes in the tissues. Thus the first consequence of acute inflammation of the lungs is *engouement*—after this a second stage of granulation succeeds, producing *hepatization*, and a third, of contraction and chronic organic change, which results in *induration*. The nature of these consequences may however be much modified by the state of the constitution, and, in some cases, the effusion of pus and lymph occurs instead of the granulating process, producing grey hepatization, or abscess, or repletion of the air cells and lobules with lymph. As a general rule derived from the invariable succession of events, it may be established

* Thes. ad Aggreg. p. 10.

as an axiom, that if effects differ, we are necessarily led to suppose some difference in the nature, or peculiarity in the combination, of the causes by which they are produced. By this mode of reasoning we at once conclude that if pulmonary tubercles arise from inflammation, its nature differs from that which occasions hepatization of the structure of the lungs, or the other changes which we have described.

The investigations of Broussais, Alison, and Andral have at least demonstrated that inflammation or congestion often *precedes* tubercular deposition. The signs which announce pulmonary tubercles are generally *preceded* * by a simple inflammation of the mucous membrane of the bronchi—†by hæmoptysis—or by an inflammation of the parenchyma, of the lungs, or of the pleura. In some cases it seems difficult to deny that inflammatory action is even the immediate antecedent of tubercular deposition. Dr. Alison‡ dissected children “previously quite healthy,” who had “suffered an attack of acute inflammation from a known cause very recently before death, and never recovered from that attack, but died manifestly of its consequences. A large deposition of tubercular matter was the chief appearance on dissection, and the disorganization produced in this way was so extensive that it was quite impossible to suppose it to have existed previously to the inflammatory attack, when the patients appeared to be in perfect health. The tubercles appeared closely connected with, and graduated insensibly into the usual and acknowledged effects of inflammation. The tubercular matter was diffused through the substance of the lungs, passed by insensible degrees, as I have seen in many other cases, into the adjoining hepatized induration; and the lines of tubercular matter in the substance of the lungs appeared so precisely similar to the contiguous plates of lymph on the pleura, that I think no one could reasonably ascribe to them a separate and wholly different origin.”§

* Andral, tome iii., p. 29, where this subject is abundantly illustrated.

† Parmi les individus qui ont craché du sang à différentes époques de leur vie, un cinquième seulement n'est pas atteint de tubercules pulmonaires.

Parmi ceux qui meurent phthisiques, un sixième n'a jamais craché le sang; les trois sixièmes, ou la moitié n'en crachent que lorsque les tubercules pulmonaires ont déjà donné des signes non douteux de leur existence, et enfin chez les deux autres sixièmes l'hémoptysie paraît précéder le développement de ces mêmes tubercules, et en être le point de départ. Andral Clinique Medicale, tome iii., p. 187.

‡ Trans. of Medico-Chirurg. Society of Edinburgh, vol. iii. part i., p. 284; see also vol. i., p. 416. &c.

§ M. Andral a vu des tubercules dans les lobules hépatisés, et d'autres portions également hépatisées, mais sans tubercules, ce qui prouve que l'inflammation n'avait pas été produite par les tubercules, mais bien que ceux-ci en étaient simplement l'effet. J'ai eu l'occasion de vérifier plusieurs fois les remarques des auteurs que je viens de citer, je pourrais y ajouter un fait du même genre, observé il y a quelques jours à l'hôpital des Enfants avec M. Couture, interne à cet hôpital: ce fait exactement semblable à celui décrit par M. Andral, le confirme de la manière la plus évidente. Lombard Essai sur les tubercules, p. 31.

Dans plusieurs cas de méningite chez des enfans scrophuleux, on peut suivre l'inflammation dans ses produits. On voit, dans un point, du pus, et, dans un autre, des tubercules, sans qu'il soit possible de tracer une ligne de démarcation entre ces deux états, p. 38. (Op: Cit.)

Often the immediate antecedence of inflammatory action to tubercular deposition is less evident. All acute inflammation has sometimes been absent for a considerable period, or never been observed at all before the symptoms which suddenly announce the presence of extensive tubercular deposition have been, in any degree, discernible by the most minute and watchful scrutiny. We cannot easily imagine that the lungs could have been loaded with this morbid deposition during the intervening period, and that no serious functional disturbance should have occurred. Concerning such cases, it appears reasonable to adopt one of two conclusions; either that the deposition has been gradual, and that the function has been first disturbed when the mass has accumulated to a certain extent;* or, secondly, that these bodies have been suddenly secreted, and have occasioned in the first moments of their existence, the peculiar symptoms of their presence. If either of these suppositions be well founded, a great portion, or all of the tubercles have been eliminated at a period subsequent to the existence of acute inflammation, and are the results of an action which has succeeded to it, and gradually or suddenly deposited them in the substance of the organ. The peculiar vascular motion which secreted the tubercles, differed therefore, in some quality, from acute inflammation, or even had frequently nothing acute or active in its character.

I do not, however, intend to insinuate that tubercles are, at different periods, the result of vascular motions of a totally opposite character; but we may conceive, that whatever be the nature of the action which secretes these bodies, it may at one period deposit them in an exceedingly short space of time, like acute inflammation; and at another, proceed by more slow and obscure changes, like chronic inflammation, to terminate in the same product as the more active form. M. Andral and Dr. Alison agree in thinking, that “† the conditions which appear most requisite in order that inflammation may generate tubercles in the living body are, the long duration and slight intensity of that inflammation. It is highly probable that the scrophulous diathesis disposes inflammation to terminate by tubercular deposition simply by giving to it these characters—keeping it up long, and not permitting it to rise high.”‡

If these and similar states of the constitution have the power of modifying inflammation, they are also capable of giving a peculiar character, and maintaining for a certain period, *those actions which succeed to it*. The evidence accumulated concerning the origin of tubercles is of two kinds, one favouring the immediate antecedence

* See Andral Clinique Medicale, tome iii., p. 69.

† Medico-Chirurg. Trans. of Edinburgh, vol. iii. part i., p. 305.

‡ L' intensité de l' inflammation n' est pas un élément aussi essentiel que la longueur de sa durée pour la formation des tubercules. Cette observation qui n' avait point échappée à la sagacité de M. Andral est confirmée par la pratique de tous les jours et la plupart des phthisiques que j' ai questionnés dans les hôpitaux m' ont dit avoir eu des catarrhes nombreux mais légers. P. 34, Essai sur les Tubercules, par H. C. Lombard.

of inflammation, and the other the precession of peculiar vascular motions which may succeed to inflammatory action, even after very considerable intervals, or may perhaps occur without any antecedent inflammation. The evidence in favour of this latter position is subversive of the former, but we may conceive that more minute observation may discover circumstances connected with the former order of facts, reducing them to examples of morbid action, differing rather in their *energy* and the *rapidity* with which they produce their consequences, than in their *nature* from the latter. Inflammation we conceive generally produces tubercles as a *secondary consequence*, being itself the *antecedent* of an irritative vascular action, (of greater or less energy,) by which they are secreted, and that in scrophula and certain other states of the constitution, it has an especial tendency to terminate in this way. It remains to be determined by more extended observation and inquiry, whether external agents and constitutional causes have the power of producing these effects without any antecedent inflammation; and, secondly, whether tubercles can occur without any hereditary taint of the constitution.

The irritation produced by the inhalation of molecules of foreign bodies, sometimes occasions tubercular deposition, and, often independently of any hereditary diathesis. "If we suppose, as I think we must do," observes Dr. Alison, "that the phthisis of masons is chiefly to be ascribed to the irritation of the particles of sand inhaled, we may regard the undoubtedly peculiar prevalence of the disease, as a proof that long continued irritation by foreign bodies, may occasion the development of tubercles, *in many in whom they would not otherwise have appeared.*"*

During my residence as *interne* of the Royal Infirmary in Edinburgh, some years ago, I repeated the experiments of Cruveilhier.† He injected mercury into the femoral artery of one dog, and into the trachea of a second, and, some days after, found the tissues of the muscles and lungs gorged with miliary tubercles. The results of the experiments which I performed were exhibited to Professor Alison, and inserted in his excellent paper ‡ on the origin of Tubercles—an essay which certainly contains the strongest arguments which have ever yet been adduced in favour of their inflammatory origin. The importance of the subject, and their immediate connection with the objects of this paper, must be my apology for introducing these experiments in these pages.

A very small globule of mercury was introduced into the trachea of each of the rabbits, which were the subjects of the experiments, by small incisions which soon healed. This produced at first much coughing, which occasionally returned afterwards, but the animals did not appear much incommoded, and took food well; their breathing, however, appearing rather hurried.

* Edinburgh Medico-Chirurg. Society's Transactions, vol. iii., p. 298.

† Nouvelle Bibliotheque Medicale, Sept., 1826. See also the works of Beddoes.

‡ Op. Cit., vol. iii.

The first rabbit was killed eight days after the introduction of the mercury, and it is singular that the appearance of clusters of tubercles was more distinct in this, than any of the others. The lungs are preserved in the Museum of the University of Edinburgh, but the colour of the tubercles does not now contrast with that of the pulmonary substance, as before the lungs were put in spirits; and several of the clusters were also destroyed in examining them minutely. The appearance of several of the clusters was so exactly that of tubercles in their early stage, that Dr. Monro, and several other friends to whom Dr. Alison exhibited them, gave them that name without hesitation, before they were aware how they were produced: but on cutting into them, each contained in its centre an exceedingly small molecule of mercury.

It is to be observed further, that in several parts of these lungs there was partial hepatization.

The second rabbit, after appearing drowsy and oppressed for a day, was found dead eight days after the operation.

The upper lobe of the left lung was discovered hepatized in the whole of its anterior border, through which were scattered small granular bodies of a yellowish color, each containing in its centre an extremely small globule of mercury. They had all the external characters of ordinary tubercles. In the centre of this lobe, existed a cavity containing a soft caseous substance, surrounded by a firm membranous cyst. It was about two and a half lines broad, and three in length. Large globules of mercury escaped from this cavity. In the posterior part of this lobe was an extremely small cyst, *containing neither tubercular matter, nor a mercurial globule.*

The lower lobe of the left lung was also hepatized in the whole of the anterior border, through which numerous small granular and apparently tubercular bodies were deposited, containing generally a small globule of quicksilver in their interior. The superior lobe of the right lung was in some portions hepatized. A greyish, and apparently tubercular substance was *infiltrated into portions of the pulmonary texture.* In the anterior part of this lung existed a *large encysted cavity*, filled with a soft yellowish granular mass of a caseous substance, resembling the matter of softened tubercle. The cyst was distinct, apparently well organised, being of firm texture, and the cavity was capable of containing a large pea. In the lower lobe of this lung tubercular deposition also existed, surrounded by hepatized structure. Several bronchi were much dilated, and a similar substance was deposited *round their parietes.*

The other rabbits were killed four weeks after the operation.

Third Rabbit.—In the upper lobe of the left lung a large globule of mercury was found imbedded in a quantity of soft greyish lymph, surrounded by a distinct cyst. Many globules of mercury were found scattered in the lungs, without either hepatization or deposition of lymph. The lung however appeared emphysematous, and some dilated bronchi were observed. In the right lung, the appearances were similar. The globules generally were found in the thin border of the lung, and appeared to have excited little inflammation there.

Some partial condensation, and a few granular bodies resembling tubercles were observed.

Fourth Rabbit.—Much hepatization had been produced in the lung. Dilated bronchi were observed in many portions, and on the extreme thin border of the tissue many globules of mercury existed, unsurrounded by hepatized structure, or lymph, but apparently contained in enlarged cells. In the centre of the lung, as before, they were in some cases surrounded by lymph, which had the form of tubercles.

Fifth Rabbit.—The general appearances in this lung resembled those described in the others; but at the extreme thin border of the lung, a row of globules of mercury existed not simply contained in air cells, but surrounded each by a very evident thin deposition of lymph.

“I consider” says Dr. Alison, “the results of these experiments (coinciding as they do with those related above) as sufficient proofs, that by the inflammation which is generated by the irritation of foreign substances, depositions of lymph may be excited in the lungs of these animals, which present all the external marks and which appear in some instances *to run the usual course of tubercles.*”*

Lymph was not however secreted throughout the whole of the *inflamed* portions of the lungs, but only in the immediate vicinity of the small globules of mercury scattered through their structure. The increased vascular action had thus produced granulations and consequent hepatization in one part, whereas, under the immediate influence of a specific irritation, it had, in the adjacent tissue, terminated in a very limited albuminous deposit. We conclude therefore, that the increased vascular motions which secreted the bodies resembling tubercles, differed in some quality from ordinary inflammation. The secretory action was rapid and energetic, but we can conceive that it might produce the same result by a slower and more chronic process, provided the degree of irritation from foreign molecules were diminished, or its character changed. One fact of great importance was ascertained. In all the rabbits subjected to this experiment, the same appearances were discovered. The differences in age and in the state of their health appeared to have no controul over the irritation produced by the foreign molecules. It occasioned in all, the secretion of bodies resembling in form, color, and all other external characters, tubercles. Supposing the secretion thus produced identified with tubercles, we necessarily conclude that irritation of a certain nature and intensity, continued even for a short time will in all constitutions produce phthisis. It became therefore desirable to inquire whether, as these bodies resembled in external characters, they were liable to the same changes as tubercles, and terminated in producing a similar disorganization of the lungs. Cavities of a considerable size had been produced in some of the lungs of the rabbits; but with the hope of obtaining further information concern-

* Edinburgh Medico-Chirurgical Trans. vol. iii. p. 304.

ing the changes which occurred, after successive intervals, I repeated the experiments on nine other rabbits, in the presence of the pupils of the Ardwick and Ancoats Dispensary.

The first died in thirty-six hours. The trachea was much inflamed, and a plastic secretion of lymph in the vicinity of the wound inflicted in the experiment, had considerably diminished its canal. The upper and the middle lobe of the right lung were hepatized, and studded throughout the whole of their tissue with granular bodies resembling tubercles, from the centre of each of which an exceedingly minute molecule of mercury escaped, when they were divided by the scalpel. The lower edge of the third lobe was studded with similar bodies. The surrounding tissue was more vascular than healthy portions of the pulmonary structure.

The whole of the upper and several portions of the lower lobes of the left lung were hepatized, and apparent tubercles were scattered through their tissue. In the lower border, the appearance resembled that described in the corresponding portion of the other lung.*

The only distinguishing feature of this experiment was the rapid and speedily fatal course of the inflammation, and the short time in which the secretory action deposited the tubercles.

The second rabbit died one month after the operation. Its breathing had gradually become more and more oppressed, until at length excessive dyspnœa ensued.

The borders of all the pulmonary lobes were studded with bodies resembling tubercles, and within the centre of each a very minute molecule of mercury was discovered. These apparent tubercles had in some instances united to form one larger aggregate : on dividing this, the exceedingly small points of mercury, discovered in the centre of each tubercle, were found in different parts of this mass. They had become foci of irritation and secretory action, whose agglomerated product formed the result.

In one portion of the lower border of the right lung, a cavity was discovered capable of containing a small pea, and surrounded by a similar albuminous deposit, in which were discovered at different points a few very minute molecules of quicksilver. The accreted tubercular mass in which this cavity occurred was thus evidently produced by the aggregation of single tubercles, which had been in part expectorated. In this case, distinct evidence appeared that these bodies were liable to the aggregation, softening and subsequent formation of cavities which are observed in the course of ordinary tubercles.

The pulmonary structure was almost universally hepatized.

After rather more than six weeks from the period when the operation was performed, I killed two rabbits. They, and all the rest of those subjected to the experiment had been apparently, in perfect health. They had not been observed to cough for some weeks—their respiration had not been at any time rapid or laborious—they

* This lung was exhibited at a meeting of the Literary and Philosophical Society of Manchester, held Nov. 26th, when several medical gentlemen were present.

had taken their food heartily, and were fat—their fur was smooth and glossy, and they had lived in incessant activity in the burrows prepared for them.

In one of those killed, the middle lobe of the right lung was hepatized, and minute granular bodies exactly resembling tubercles were scattered throughout its whole tissue. A few occurred along the borders of the lower lobe. The upper part of the left lung was also hepatized, as was also a small part of the superior portion of the lower lobe. Tubercles were scattered through this structure, and existed in the border of the lower lobe, but the lungs were in other parts every where healthy and crepitating.

These lungs furnish an example of tubercles produced by secretory vascular motions of the most energetic and active character—resembling that which produced hepatization of the surrounding structure. As the disorganization and deposition were confined to certain limited portions only, the consequences which might otherwise have occurred at an earlier period, had not yet ensued.

The second rabbit had been exceedingly healthy and active, and was very fat.

Its lungs presented most interesting specimens of isolated tubercles and aggregated masses, which were scattered through the otherwise healthy tissue in all their lobes. In some places, the tubercles, both when alone and when united in accreted masses, were solid. In some isolated tubercles, softening had commenced in their centre, but had not yet affected the whole of their body; and in several masses, a similar process had only commenced in the centre; whereas, in others it had invaded a great portion of the whole aggregate. In these last examples, the softened substance exactly resembled ordinary tubercular matter passing a similar stage of its successive changes. I exhibited these lungs to several most intelligent professional friends, who agreed that the resemblance between the several stages of tubercular degeneration observed in them, and what is witnessed in the human subject, was exact. No one could point out any feature by which the one could be distinguished from the other.

It is remarkable that in these last lungs, *no trace of inflammation existed*. The tubercles had, we may therefore suppose, been produced by the specific secretory action in its most chronic state, when it entirely differs in character from acute inflammation.

The result of these experiments may be thus stated.

The irritation of exceedingly minute and scarcely visible molecules of mercury scattered through the pulmonary tissue, produces, in their immediate vicinity (with greater or less rapidity, and by an active or chronic secretory motion) a deposition of a white, apparently albuminous substance, resembling in all external characters a miliary tubercle.

The surrounding tissue of the lungs is generally hepatized, but no secretion of lymph occurs in portions of the structure beyond the irritative influence of the molecule of quicksilver. Sometimes, however, there is no trace of inflammatory action in the vicinity of the tubercles, or in the whole lung. The bodies thus produced are,

when first deposited, soft—gradually they become harder, and at length solid; and they tend to aggregate into accreted masses. Afterwards, softening commences in the centre, not only of each isolated tubercle, but of the masses produced by their union, and gradually extends to the circumference. In this stage, a semifluid tenacious substance is expectorated, leaving a cavity resembling that which occurs in the human lungs in Phthisis.

This disease may be produced in any subject, provided the irritation be sufficiently intense, and be continued for a certain length of time.

The history of these bodies resembles therefore, in all its minute features, that of pulmonary tubercles.

I have still preserved five rabbits for the purpose of observing the changes which may subsequently ensue, and with the hope of elucidating, in some degree, the interesting subject of the spontaneous cure of Phthisis. Whether the results of these experiments favour the opinions supported in this essay, or, on the contrary, invalidate them, I shall not fail to record, and at some future period to submit them to the professional public.

The exceedingly minute molecules of mercury scattered through the pulmonary tissue, in these experiments, appear, from their situation being frequently immediately beneath the surface of the pleura pulmonalis, to have penetrated to the extremities of the bronchial ramifications, and to be in fact contained in those portions of the lungs, which anatomists have denominated air cells. They are surrounded by a secretion of lymph resembling in form, color, and all other external characters, a tubercle. The cellular tissue which unites the different parts of organs has been considered their exclusive seat by Bayle, Baillie, and Blainville. Laennec and Andral only conceive it *probable* that tubercles may be developed on the surface of mucous membranes; whereas, M. Cruveilhier* contends that this is demonstrated by these experiments. M. Lombard,† on the contrary, thinks that it is reasonable to suppose, that the secretion occurs chiefly in the adjacent interstitial cellular tissue by the irritation of the mucous membrane, which is itself in contact with the mercury, and which easily transmits such actions to the subjacent parts. From what I have observed in the preceding experiments, I think it is sometimes most evident that the greater part of the secretion occurs in the surrounding interstitial structure; but a film of lymph is sometimes, if not always, thrown out on the surface of the membrane lining the air cell: for occasionally this secretion accumulates, and distends its cavity: the tubercle then consists, when recent, of a soft unorganized albuminous deposit, containing the molecule of mercury in its centre, without the intervention of any membrane.

I have seen two instances of a *peculiar* inflammation of the lungs, which has not, I believe, been recorded, and which, as it appears in some degree to illustrate this subject, I shall describe. The inflammation was lobular, and differed from the red and grey hepatization.

* Nouvelle Bibliotheque Medicale.

† Essai sur les Tubercules, p. 22.

Lymph had been eliminated, either in the cavity of the air cells or their surrounding tissue, so that each inflamed lobule somewhat resembled a closely compacted congeries of large miliary tubercles separated from each other by only very slight bands of the pulmonary structure. The lobules in which this had occurred presented, at first sight, the color and general appearance of encephaloid tumours, but their granular structure became evident on the slightest inspection. Would this structure follow the same progress as tubercles in their softening, and the subsequent formation of cavities?

Phthisis prevails in many employments in which the artizan respire an atmosphere loaded with small particles or filaments. Patissier, in his treatise on the maladies of artizans, has given interesting details concerning the effects of some of these occupations. "Stone-cutters and masons often inhale the sharp angular fragments of stone which are driven into the air by their mallets: thus the greater part of them are tormented with cough, and some of them become asthmatical or even phthisical." There is a memoir at the close of Bloue's *Précis d'operations de Chirurgie*, on the phthisis which attacks the "tailleurs de grès ou de Saint-Roch."—"The greater part of the workmen are attacked by the disease of Saint Roch before they are forty years of age: some, however, though very few, escape phthisis, and live as long as other men. This disease commences by a dry cough which continues some months; the patients then expectorate: their sputa are successively white and frothy, thick, bloody, and purulent: they experience occasionally great oppression, and a burning sensation in the trachea: the voice is hoarse, and there is continual fever. The region of the liver is hard, and the patients complain of suffering a sensation of weight. The epigastrium is tender. The appetite continues until diarrhoea occurs, then the sputa are arrested; the hair and nails fall off; sleep is impossible, or accompanied with profuse perspirations. The sufferers become emaciated like spectres; the limbs, the feet, and the hands are œdematous, and death occurs soon after the commencement of this anasarca. This affection may continue six months, a year, or sometimes several years.

"The dust detached from the stone penetrates the lungs by the mouth, is arrested in the respiratory canals, mingles itself with the mucosities with which these organs are lubricated, and sometimes forms true calculous accretions which excite cough and hæmoptysis, and may even occasion dangerous inflammations of the pleura and lungs. M. Blozier has observed that the workmen who "taillent le grès" are more subject to *catarrhs* than other men exposed to rough and violent labour. These diseases degenerate most frequently into cases of Phthisis, which slowly terminate fatally."*

* Patissier maladies des artizans, p. 95. See also Ramazzini.

Les maladies des meuniers different peu de celles des boulangers. Vivant dans une atmosphère chargée de particules farineuses, les meuniers en avalent malgré eux une grande quantité. J'en ai vu devenir asthmatiques et hydropiques. Op. cit p. 196.

Dr. Knight, in the interesting paper with which he has enriched the pages of this Journal, has described the fatal effects produced by the inhalation of the particles of steel, which are driven into the air during the grinding of cutlery at Sheffield. His graphic portraiture of the features of the terrible ravages of the disease, known under the designation of the grinders' asthma, leaves little doubt in my mind that it frequently terminates in tubercular consumption. I feel supported in this conclusion, by the examples of this malady which I have occasionally witnessed in Manchester, arising from the grinding of the spindles and cards used in cotton spinning. In the few cases which have occurred within the range of my observation, I have been able to recognize, with the aid of the stethoscope, the signs which mark the progress of tubercular consumption, which I have had more than one opportunity of demonstrating to some of the officers and pupils of the Ardwick and Ancoats Dispensary.

Another source of pulmonary irritation and its consequences, exists in the employment of the cotton spinner. Concerning these artizans Patissier says; "These workmen constantly inhale an atmosphere loaded with *debris cotonneux tres-tenus* which excite the bronchi, provoke cough, and maintain a perpetual irritation in the lungs.* They are often obliged to change their occupation to avoid phthisis."

The situation of the Ardwick and Ancoats Dispensary, in the centre of a dense mass of the population engaged in cotton spinning, has afforded me for some time past ample opportunities of observing that this statement is generally correct. The importance of the subject will justify my entering into details, which I hope may prove in some degree interesting and instructive.

In the production of yarn, cotton is subjected to various processes, during the different stages of which, considerable quantities of dust and small filaments escape, and are driven into the air by the circular motions of the machinery. As the quantity of foreign particles suspended in the atmosphere varies, in the successive steps of the manufacture, and the effects produced have some relation to these circumstances, a succinct description of them will enable me more clearly to elucidate the source and nature of the diseases which are sometimes induced. By the first process, the heterogeneous substances mingled with the raw cotton are separated from it. For this purpose a *blowing machine* is generally employed, and notwithstanding every precaution which ingenuity has devised to cover this engine, considerable quantities of dust and filaments escape from its

Maladies des Pelletiers, des Plumassiers, des Converturiers, des Tricoteurs, et des Filateurs de Coton.

Tous ces ouvriers sont sujets à une toux habituelle, à l'asthme et à la phthisie pulmonaire, que déterminent les corpuscules légers sans cesse entraînés dans la trachée—artère et les bronches. Op, Cit. p, 24."

L' inhalation de vapeurs irritantes dans les professions suivantes, telles que les meuniers, les perruquiers, les tailleurs de pierres, les chiffouiers, les cardeurs, les épingliers.—Essai sur les Tubercules, Par H. C. Lombard.

* Sur Les Maladies des Artizans. p. 245.

crevices, and impregnate the atmosphere in its vicinity. Where very fine cotton is employed, foreign substances are separated from it by beating it upon a frame with long wands ; and when this operation is performed in small and unventilated rooms, the air is often loaded with the molecules of dust which are disseminated through it by every blow.

After cotton has been thus, in a certain degree, cleaned, it is carried to the card room, where, by being drawn through circular wire cards, its fibres are extended in parallel lines, and are freed from much remaining dust. In this process, particularly when coarse cotton is used, the circular motions of the cards propel into the air great quantities of short filaments and foreign particles. The rooms in which this operation is performed are frequently large, and contain a very great number of machines, situated at distances which just permit the workmen to pass round them. Various other processes (drawing, jacking, slubbing, &c.) are also frequently accomplished in the same space.

The carding of cotton employs a great number of workmen and their younger assistants, and in some coarse mills, the atmosphere is so loaded with foreign particles as to prove a source of pulmonary irritation to a visiter, who spends even a few minutes in the rooms. Many fine mills, however, contain card rooms which, from the quality and cleanliness of the cotton, and the system adopted,* are comparatively free from the molecules and filaments which cloud the atmosphere in others. After having been carded, the cotton is carried into other rooms, where it is spun, drawn, and twisted, to different degrees of tenuity. In each succeeding step of these processes, the quantities of dust and filaments which escape diminish, until, at length, in some of the finest mills, they are, in the last stages, scarcely perceptible.

I have ascertained by inquiries which I prosecuted extensively amongst the population engaged in cotton spinning, that those employed in the early processes, and particularly in the card rooms, are much more subject to those affections of the lungs which are vulgarly classed under the symptomatic denomination of coughs, than the workmen engaged in the latter operations ; and that these affections are more frequent, *cœteris paribus*, in mills where coarse and therefore dirty cotton is spun, than where a finer and cleaner material is used.

The dust and filaments which are necessarily inhaled in these occupations, occasion considerable pulmonary irritation. In this example, as in others, however, is displayed that peculiar law of structure, by which it insensibly undergoes changes which enable it to endure the presence of a foreign or noxious substance, without suffering the ordinary functional derangement ; and a great propor-

* Several gentlemen, impressed with the necessity of adopting some system, have invented methods of ventilation and of covering the machines, which have considerably diminished the evil.

tion of the operatives engaged in cotton spinning, suffer little, if at all, from the foreign particles which they inspire during twelve hours in the day. The diseases which arise from the circumstances we have described, are chronic and subacute bronchitis—a state of the pulmonary structure, in which the signs of inflammatory action are less evident, but, in which the chief symptoms indicate a great irritability of the lungs; and these complaints *occasionally* terminate in phthisis.

A chronic inflammation of the mucous membrane of the bronchi, is a common disease amongst those employed in the most dusty rooms of cotton mills. The patients cough and expectorate frequently through the day, whilst engaged in their employment, and especially on awakening in the morning; their respiration is oppressed by inconsiderable exertion; the voice becomes hoarse and harsh; and their strength and health are gradually impaired. Appetite fails, and the digestive function becomes disordered, and on slight exposure to cold, their symptoms are aggravated, or acute bronchitis occurs, which obliges them to seek medical aid. These cases are often prolonged, and pass through stages of suffering and emaciation which reduce the patient's health to the lowest ebb.

In many cases which have presented themselves at the Ardwick and Ancoats Dispensary, the disease induced has appeared to me to differ from ordinary chronic bronchitis. In the commencement of the complaint, the patient suffers a distressing pulmonary irritation from the dust and filaments which he inhales. Entrance into the atmosphere of the mill immediately occasions a short dry cough, which harasses him considerably in the day, but ceases immediately after he leaves the mill, and inspires an atmosphere free from foreign molecules. These symptoms become gradually more severe; the cough is at length very frequent during the day, and continues even after its employments have ceased, disturbing the sleep, and exhausting the strength of the patient; but it is accompanied with little or no expectoration.

In this stage he seeks medical aid. He is harassed with a frequent cough, which is often excited by speaking, by slight exertion, or a change of temperature. The patient sometimes expectorates a little, but the cough is often dry and short, and recurs incessantly. He experiences a diffused and obscure sensation of uneasiness beneath the sternum. On sudden exertion a pectoral oppression ensues, arising, as it were, from an inability to dilate the chest fully in the ordinary inspirations. The whole respiratory system evinces a great and easily excited irritability. There is little febrile action. On the application of the stethoscope no râles are in general perceptible, and the respiratory murmur is scarcely puerile. The patient is easily affected with acute bronchitis on exposure to its exciting causes, and this disease often succeeds the previous complaint.

When I have witnessed this disorder, I have found it necessary to insist that the patient should abstain from his ordinary employment, for some time after his apparent convalescence. When this injunction has been disregarded, immediate relapse has generally

followed, and the most severe symptoms have re-appeared. The remedial process has consisted in applying a blister to the chest; in the use of an anodyne expectorant mixture, and of gentle purgatives. In many cases, the patients have experienced great relief from their tormenting cough, by putting into a hot vessel about three parts of sulphuric ether and two of laudanum, and inhaling the vapour for some minutes, two or three times in the day.

In one case, these symptoms were not so easily alleviated; and a state differing from that which is thus relieved, by no appreciable symptom excepting a greater quickness and irritability of the pulse, resisted the remedies employed, and was the forerunner of Phthisis. If this latter case differed at all from the former, it was perhaps in the state of the patient's constitution—there were strong indications of scrophula.

In families in which consumption has appeared to be hereditary, inasmuch as several of their members have, in succession, become the victims of this insidious disease, I have observed that it has, in the higher ranks also, sometimes been preceded by a state of the pulmonary structure resembling that which I have described, but whose origin could be attributed to no apparent external cause. Conceiving it important to recognize this state early, in order that its progress may be arrested ere fatal mischief has occurred, I shall attempt to delineate the general features of some cases which I have minutely watched, and to which the practice of most will soon furnish them with a parallel.

In families which exhibit distinct evidences of scrophula, one or more of the members not rarely become the victims of tubercular consumption. Shortly after such a catastrophe, the apprehensions of the survivors are awakened to a jealous anxiety concerning the slightest symptoms of indisposition, as they frequently experience a gloomy presentiment that they shall perish by the same fate. A slight cough excites more than ordinary alarm, and the physician is summoned to witness symptoms which might otherwise have been overlooked and neglected. In such constitutions, Phthisis frequently commences most insidiously.* The patients are disturbed by a peculiar, short, irritable cough, which is excited by speaking and by

* Andral Clin. Med. tom. iii. p. 109. Cette petite toux sèche qui marque le debut d'un certain nombre de phthisies, présente un autre caractere qu'il ne faut point négliger; c'est qu'après avoir cessé elle est très sujette à récidiver. La cause la plus légère suffit pour la rappeler avec une remarquable facilité. Ce genre de toux ne s'observe guère dans une bronchite sans tubercules; mais cela prouve-t-il que les tubercules pré-existant à la bronchite, causent les frequens retours de celle-ci? Cette opinion peut être soutenue, mais elle n'est pas sans réplique; car on peut tout aussi bien concevoir que la toux sèche et petite dont il est question puisse être le résultat d'une légère irritation primitive des bronches, et qu'en vertu d'une pre-disposition particulière cette irritation soit sujette à récidiver, comme chez d'autres individus on voit récidiver des angines sous l'influence de la plus faible cause. On conçoit encore que consécutivement à ces fréquens retours d'irritation bronchique il pourra se développer des tubercules, qui une fois formés deviendront à leur tour une cause permanente de la bronchite légère que leur avait d'abord donné naissance, et peut-être alors seulement celle-ci deviendra-t-elle continue.

slight exertion, but is at first accompanied with little or no disturbance of the respiratory function, and with no expectoration. The health slowly declines; the patient becomes weaker, and gradually more indisposed for exercise, and the pulse is occasionally rapid. After some time, febrile paroxysms may ensue, but are seldom sudden in their accession, or well marked in their progress; though at their height, the pulse is frequent and sharp. The disease may be fatal and little or no expectoration occur. In this state the practitioner may be exceedingly perplexed in forming his diagnosis. The stethoscopic signs often remove all doubt concerning the nature of the disease. The existence of a general, harsh, puerile respiration is the most common sign; but sometimes bronchophony, accompanied by bronchial respiration, and a dull sound on percussion, is discovered beneath the clavicles; or a very slight and distant intercurrent crepitous rale may be distinguished, in exceedingly limited portions of the pulmonary structure. This last sign, combined with a distinct and general puerile respiration, may be accepted as very strong evidence in favour of the existence of miliary tubercles.

A year may elapse, the symptoms continuing unchanged, or greater constitutional irritation may have supervened; with more frequent febrile paroxysms, and a more constant rapidity of the pulse—but these signs are often absent. The patient may in this way gradually become emaciated, and, in the last stages, only, may hectic, copious expectoration, or colliquative diarrhoea occur. At other times, acute bronchitis is suddenly developed, without any evident external cause. The pulse is rapid, full and harsh—the skin hot—the breathing much disturbed—the expectoration copious, and resembling that of ordinary inflammation of the bronchi. The puerile respiration may be obscured by the sonorous mucous rales which pervade the lungs. The chief signs which enable the intelligent practitioner to distinguish this disease, from ordinary inflammation of the bronchi, are, that *it baffles all the ordinary remedies*. Though antiphlogistic means are freely employed, the pulse maintains its frequency, sharpness, and irritability; and blisters, and medicinal agents seem to have no influence over the progress of the complaint. It often terminates fatally in three weeks or a month after the symptoms indicating acute disease appear, or the tubercles soften and caverns are discovered beneath the clavicles in an exceedingly short space of time.

In these cases, distinct evidence may sometimes be obtained, of the existence of extensive tubercular deposition, before the accession of acute symptoms. The patient may even expire without any symptoms excepting a dry short cough, and general constitutional irritation: and when the tubercles excite bronchitis, it evidently arises from some internal cause, and occasions such rapid maturation and softening of the tubercular deposition as to prove speedily fatal. The previous cough must be accepted as evidence of serious pulmonary changes, and of a consequent irritability of the lungs, which deserves watchful scrutiny and careful treatment.

The chronic bronchitis which the spinners suffer, occasionally, though not frequently, terminates in phthisis. I have however, seen

well marked examples of tubercular consumption thus induced, but have been unable to detect any peculiarity in its features, by which it may be distinguished from some of those protean forms of this malady, which occur when it arises from other causes. My able colleague Dr. Phillips has been inclined to think that sudden inflammation and the consequent abrupt termination of the disease, whilst the miliary tubercles are scattered in an unaggregated and unsoftened state through the structure of the lungs, is more frequent in spinners' than in ordinary phthisis. My own observations, on the contrary, have afforded no example in support of this opinion. The number of the cases which I have witnessed, though sufficient to establish the source in which the disease originated, has not, however, been so extended as to enable me to draw conclusions concerning its progress, from a wide comparison of individual examples.

Scrophula acts as a powerfully predisposing cause ; but it is by no means a constant accessory to the production of phthisis. External agents appear to exert so great an influence, that if considerable local irritation be maintained during a protracted period, perhaps no constitutional power is able to resist its influence. Thus the grinders of Sheffield perish, though whether they all fall the victims of tubercular consumption remains an undecided question, which it is of the greatest importance to determine. In the experiments related in the preceding portion of this essay, none of the animals escaped tubercular disease, though their ages and the state of their health widely differed.

That peculiar cachexia which is induced by protracted labour, in unhealthy occupations, in large cities—imperfect nutrition—irregular and dissolute habits—and constantly depressing mental anxiety and gloom, is apt to lead chronic bronchitis through that succession of morbid actions which produces tubercular consumption. The features characteristic of this morbid state, have preceded the development of most of the cases of spinners' phthisis which I have witnessed.

The spinners' phthisis is, I conceive, seldom or never produced by the impaction of foreign molecules in the pulmonary tissue, but is a consequence of the morbid actions induced by their constant contact with the mucous membrane. The particles and filaments, with which the air is clouded, are inhaled ; they irritate the bronchi, and occasion chronic inflammation, or they excite, in certain constitutions, other and more obscure trains of unhealthy vascular motions, which sometimes terminate in the secretion of miliary tubercles. These affections seldom or never in their origin assume an acute form ; they occur chiefly in constitutions weakened by general depressing causes, but an hereditary scrophulous taint does not seem to be *necessary* to their production. Irritation, when intense and long continued, will triumph over the energies of the most florid health ; but all those agents which depress the vigour of the vital powers tend to modify those vascular actions which are excited by local irritation, in such a manner, as to occasion the secretion of tubercles.

The length of this paper precludes the admission of cases, and any detail of the therapeutical means employed : it may therefore be desirable to recur to this subject at some future period.

ART X.—*Case of Chronic Inflammation of the Larynx, in which Tracheotomy was performed.* By AD. HUNTER, M. D. Physician of the Leeds General Infirmary.

I have been induced to submit the following case to the profession, with the view of recording another instance of that class of diseases of the Trachea and Œsophagus, which are at no time free from danger, and in their advanced stage generally resist the utmost efforts of medical science. The anatomy and general structure of the organs of respiration and deglutition are sufficiently familiar to the medical reader ; while several of the affections to which they are liable are daily treated with success. There are others involved in much greater obscurity, and where the attack is so insidious, that great mischief is done before the nature of the disease is even suspected, or, if known, where no manner of treatment hitherto adopted has enabled us to save the life of the patient.

The following case is also more particularly interesting, as the only instance with which I have met of chronic inflammation of the larynx, complicated with nearly complete stricture of the œsophagus.

For the copiousness of these details I am greatly indebted to the diligence of Mr. Sharp the house-surgeon; and my acknowledgements are also due to my colleague, Mr. Smith, for the care and assiduity with which he co-operated with me in the management of the case.

Betty Fieldhouse, ætat 30, Bowling, near Bradford, was admitted an in-patient of the Leeds General Infirmary, on the 14th May, 1830, under my care. She was a middle sized woman, and considerably emaciated; had been married, and the mother of five children ; her menstrual discharge regular. About sixteen months ago, when confined of her last child, she was attacked with slight soreness of the throat; which continued, causing slight hoarseness, until christmas last, when it increased considerably, and in a short time was attended with difficulty of respiration and deglutition. Her eyes and countenance are now much sunk—her appetite tolerable—no particular redness of the throat—wheezing in respiration—difficulty in swallowing—thickening or tumour behind the epiglottis—voice weak, strained, and hoarse—frequent short cough, bringing up little mucus, preventing her sleep.—Diet, milk with rice, bread crumbs, &c, ordered. Hirudines viij gutturæ et postea, Emplast. Lyttæ—℞ Tinct. Iodini gutt. xv. Decoct. Sarsæ Comp, ℥ij. ter in die.

May 15th.—The same—ordered a Linctus for the cough.

18th.—Difficulty of respiration and deglutition increases.

20th.—The same—Calomel gr. i. c. saccharo, nocte maneque.

23rd.—Continues worse ; can swallow liquids only, these occasionally producing spasm of the glottis and œsophagus. Calomel increased to two grains thrice a day.

25th—Has spasmodic cough principally during the night, although she takes from 25 to 40 drops of Tinct. Opii each night.—Last night it continued for near an hour, and almost amounted to suffocation.

Ordered Hirudines viij et Emplastrum Lyttæ gutturæ. Unguent Hydrarg. Fort. bene infricandum.

26th.—Attack returned during the night; continues worse: cannot swallow liquids: suffocation threatened.

27th.—6 A. M.—The same. Mr. Smith and I saw her in consultation at 7 A. M., and at a consultation of all the faculty at 9, an attempt was made by Mr. Hey and Mr. Smith to pass an elastic gum catheter down the œsophagus; but without success.

2 P. M.—At a consultation of all the faculty, tracheotomy was agreed to; and performed by Mr. Smith, my colleague.

Operation.—The patient sat in a chair, the head being inclined backwards and held by an assistant; a perpendicular incision, an inch and a half in length, was made, by means of a fine small scalpel upon the triangular space between the thyroid and cricoid cartilages, which was punctured with a bistoury. She took a deep inspiration at this moment, when a few drops of blood were drawn into the trachea, which produced such violent spasm as to prevent the progress of the operation for three or four minutes. Upon its subsidence, one or two veins were secured to prevent confusion; and her head placed a little forward, as she breathed easiest in that posture. The bistoury was again introduced, making a crucial incision, and cutting away the flaps. The opening not being sufficiently large, a small portion of the upper part of the cricoid cartilage was scooped out. Her countenance brightened with an expression indicative of great relief. She swallowed two or three teaspoonfuls of tea immediately afterwards, the first food of thirty-six hours; and by signs, expressed herself much relieved. An assistant watched her for three hours, during two of which she slept calmly, being the first sleep she had enjoyed for forty-eight hours.

6 P. M.—The orifice becoming choked, a coagulum was removed, and the sterno-thyroid muscle being drawn aside, she breathed with ease.—To keep the orifice open, a probe was bent in form of a speculum oculi, and retracting the muscle, it was bound there by straps of Emp. Adhesiv. This succeeded only for a short time. Tea taken in two or three spoonfuls, passed entirely into the trachea; which produced much coughing. Milk thickened with flour to be administered per rectum every two hours.

10 P. M.—A short canula was introduced with the inferior part cut away, and held in situ by Emp. Adhesiv. Rests comfortably from its use. Before the operation, the pulse was quick and frequent, it afterwards improved and remained at 100.

28.—2 A. M.—She was asleep: at 3 she awoke—the canula becoming choked, it was removed and cleaned, and the upper part cut away—she slept until 6½ A. M. when she was tolerably easy—got a few drops of tea down the œsophagus. The enemata continued.

11 A. M.—Internal orifice becoming contracted, a canula of larger caliber, cut similar to the former one, was introduced, the points being first made conical, and expanded afterwards further than the caliber of its central portion by means of a pair of dressing forceps, thus retaining itself in its situation, as the dressings being

kept constantly loose by the discharge, would not adhere. Breathes easier, continues to slumber—Expectoration has been free since the operation, although, upon a forcible expiration the mucus is partially expelled, when the following inspiration retracts it.

4 P. M.—Much exhausted—pulse feeble at 130, skin cool—tongue moist. Passing the finger down the anterior part of the throat, the epiglottis felt thickened and elevated, the rima glottidis thickened, and posteriorly an elevation turning back over the œsophagus. 7 P. M.—Has swallowed nothing during the last 24 hours.

10, P. M.—Breathes with great difficulty. About $\frac{3}{4}$ ij of strong broth have passed down the œsophagus, and a small quantity into the trachea, which, exciting cough, brought away some bloody mucus, and relieved the breathing—12, P. M. asleep.

29.—3 A. M.—Asleep—7 A. M. Awoke about $3\frac{1}{2}$, but upon the whole has had much sleep. Swallowed 10 or 12 ounces of strong broth. Injection continued. 7. P. M.—Has spent a good day, took a pint of strong broth; the occasional escape of which down the trachea produced spasmodic cough clearing it of any accumulation of mucus. Countenance improved, pain of head, and oppression of chest subsided.

30.—3 A. M.—Asleep—7. Passed a tolerable night. About 2. P. M. increase of heat came on in the throat, difficulty of breathing, edges of the wound became thickened. At 8. P. M. ordered eight leeches below the wound, and over them, a poultice; lotio evaporans to each side of the throat. Ungt. Hydrarg. $\frac{3}{4}$ i nocte manequé infricand.

31.—7 A. M.—Did not rest until 4 o'clock—Breathing easier—Pulse 80—watery discharge from the nose, eruptions have broken out about nose and mouth.—4. P. M.—Face flushed,—pulse 96. 10. P. M.—Easy. Has taken 24 ounces of broth in as many hours.

June 1st.—7. A. M.—Rested well during the night. Pulse 90; breathing easy. 9. P. M. Some sloughs and hard crusts of mucus removed from wound, making a freer passage for the air. Pulse feeble at 100.—Tongue nearly clean. During 24 hours has taken one pint and a half of broth, $\frac{3}{4}$ of a pint of rich tea ($\frac{1}{2}$ cream) and the half of an egg beaten up with sugar and wine. Has had two motions.

2nd.—Mouth slightly affected by mercury—bad night—cough troublesome—appears to have sunk considerably—pulse weak 140.—Inspirations 42.—Has not strength to expectorate—leave off the ungt. hydrarg. 12.—2. P. M.—The same. Takes wine gruel, tea, beef tea, and gravy more freely; swallows better. 4. P. M.—Pulse stronger at 120. Slumbered much during the day. Coughed up much phlegm, which gave considerable relief to the breathing. A forceps was passed into the trachea and a band of coagulable lymph which passed across it removed. 7. P. M.—Improves—Pulse 110. 11. P. M.—Pulse strong at 100. Inspirations 32. Takes more support.

3rd.—Same.—Good night.—Breathes easy for a time: in about four hours the mucus hardens in the upper part of the trachea; violent

cough comes on—mucus is freely expectorated, which must be caught by a sponge to prevent its return; in a few minutes the system becomes tranquil until another collection of mucus takes place. Her food amounts to about a quart in 24 hours. She becomes weaker—eyes sunk.

4th.—The same. 4. P. M.—Great difficulty of breathing, and is much weakened. Much pain in the right side of the chest. Apply fofus papav. 10 P. M.—Again improved after coughing.

6th.—8 A. M.—Night tolerable—has tired of every thing but tea without cream or sugar. 12.—With a great deal of persuasion she took some arrow root, and twelve ounces of new milk within the hour—Continue the arrow root, seasoned in a variety of forms, to prevent loathing.

7th.—Good night—Pulse tranquil, 100—Cheerful: much better. Has taken more support than any day since operation—upwards of two quarts. The injections of food became so troublesome, that they were laid aside.

8th.—The same, but appears to be much weaker.

9th.—Tolerable night—Pulse 115—Food the same, with some bread crumbled in milk—Pain in the head from exhaustion.

10th.—6 A. M.—Pulse 130—Considerable heaving of the chest: continues in a slumber—has not power to expel very fluid mucus. In short, nature was completely exhausted, and at 10½ A. M. death closed the scene.

Post Mortem Examination two hours after death.

The larynx completely closed and impervious, apparently the consequence of chronic inflammation, so that respiration must have been carried on entirely by the artificial opening during the last ten days. The œsophagus, about two inches downwards, is adherent to the back part of the trachea; the anterior and posterior parts of the œsophagus also adhere to each other so closely that a probe cannot be passed upwards or downwards. The œsophagus below the stricture was rather diminished in caliber, although perfectly healthy. Upon slitting it open behind, the fore-part of the Pharynx was found to be ulcerated in several places, with many deep fissures on its anterior part, filled with mucus. One in particular, situated close to where the stricture was greatest, appeared to communicate with the Trachea; but upon examination was found to be a cul-de-sac. When the Epiglottis is depressed upon the Larynx, an open triangular space is left to the back part, the portions upon which it rests being thickened and elevated by inflammation.* Upon referring to the accompanying plate it will be found that just below the orifice marked as a cul-de-sac, the diameter of the œsophagus was not sufficient to admit even a probe.

In reviewing the history and previous symptoms of this case, it is

* This, along with the stricture of the Œsophagus, will account for the ready passage the food found into the Trachea, and out at the artificial opening between the Thyroid and cricoid Cartilages

clear that little could be expected from the operation, besides temporary relief, and the protraction of life a week or two beyond the period when it appeared threatened with immediate extinction. The accomplishment of these objects, however, are not beneath the care, nor irrelevant to the duty of the medical adviser. The patient suffered little during the operation from loss of blood, though her distress was somewhat aggravated from the occasional descent of a few drops of that fluid into the trachea. The result in this case was rendered much less favourable than might otherwise have been realized, in consequence of the diseased larynx being complicated with nearly complete stricture of the Œsophagus, by which the patient was rendered incapable of taking sufficient food; so that it may be said she died chiefly from inanition.

The utility of tracheotomy in the advanced stages of all inflammatory affections of the air tubes must, for various reasons, be very limited; and, where the functions of respiration are already greatly disturbed, the operation itself is often formidable and not exempt from danger.

ART XI.—*Description of a Monstrous Human Fœtus*. By the late WM. HEY, Esq., of Leeds, F. R. S.

THIS monster, which externally had scarcely the appearance of any thing human, was a twin production, the mother having at the same birth a perfect living child.

It was almost of an equal thickness throughout, and remained in a curved position. The thicker extremity had some hair upon it, and from its concave side arose a round tumour, which was not covered with the common integuments like the rest of the body. The other, and somewhat smaller extremity of this monster was shaped like the buttocks, having a natural fissure in the middle. From the right buttock went off a member resembling a stump of the thigh after an amputation above the knee, to which was joined in a parallel situation a foot with two toes. This stump and foot made an acute angle with the lower part of the body, and approached the round tumour above mentioned. From the left buttock there arose a small toe turned outwards. Between these inferior extremities, and the head of the fœtus, (if that round tumour might be called a head) there was a considerable hollow, made by the curvature of the fœtus. Near the basis of the head, or round prominence, was the insertion of the naval string. Below this string, at the upper part of the fissure formed between the buttocks, there was a little prominence, about the size of a large pin's head, covered with the scarf-skin: this occupied the place where one would have expected to see the organs of generation.

There were no arms. A single toe went off from the stump above mentioned, like the horn of a Rhinoceros.

The dissection of this monstrous fœtus exhibited the following particulars.

The round tumour, which stood in the place of the head, though it had no human feature, was solid about half an inch, and of a

close spongy texture. This solid crust surrounded a cavity which was lined with a membrane not unlike the dura mater, or outer covering of the brain. In this cavity was found a substance about the size of a large pea, of a reddish and vascular appearance. This substance had no resemblance of the brain, except that it formed the beginning of the spinal marrow. The spine and pelvis were entire; but there were no collar bones, nor shoulder blades; nor indeed any other part of the upper extremities.

On the right side I counted eight ribs, and on the left seven.

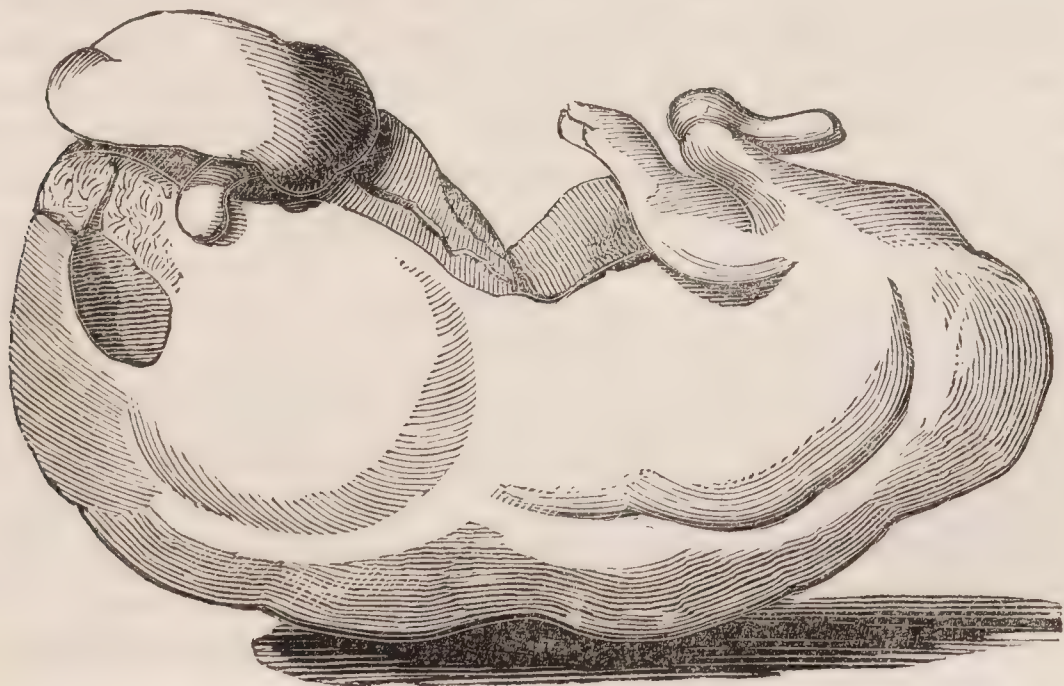
The thigh bones, with their muscles, were entire.

There was no regular division of the cavities of the thorax and abdomen; they constituted together one small cavity, in which I found a convoluted intestine, containing a reddish excrement; and one pretty large kidney on the right side. From the middle of the spine there arose a bundle of muscular fibres, on the right side, which advanced to the anterior part of the cavity, and appeared like a mutilated diaphragm.

I could find no heart, nor lungs; no stomach, liver, spleen, nor pancreas. The pelvis was very shallow, and empty: there appeared to be neither urinary bladder, anus, nor organs of generation. The lumbar nerves were perfect, and those on the right side rather large.

The parts which externally resembled the buttocks, I found to be the thighs, with their muscles as usual; but the integuments joining them together, with the intervention of a small fissure or furrow, were void of their natural external appearance. The left thigh bone had nothing joined to it; the single toe, before mentioned, arising from the integuments only. To the right thigh was joined a regular tibia, which constituted the stump already spoken of. There was no fibula; but the foot was placed on the outside of the tibia, and nearly parallel to it.

The cellular membrane of this fœtus was full of air, by keeping it too long before the dissection, which rendered the parts more obscure than they would otherwise have been. But I was satisfied as to the reality of the particulars above related.



ART. XII.—*On the Fever which prevailed in the Friends' School, at Ackworth, Yorkshire, from May to June, 1828.*

By JAMES WILLIAMSON, M.D., *Physician of the Leeds General Infirmary, &c. &c. &c.*

THE following details are submitted, in compliance with the wishes of several intelligent individuals connected with the establishment at Ackworth. To the medical reader it is feared that the statements will appear very meagre and unsatisfactory. They are, however, as copious as my limited means of observing the fever would allow: my professional attendance having commenced at a late period from its first appearance, my visits having been few, and no opportunities being permitted of elucidating the pathological character of the disease, by *post mortem* investigations. The imperfections of this essay would have been much less numerous, had I not been deprived of the assistance of a late lamented friend, who watched the progress of the fever, from its commencement, with exemplary diligence and fidelity,—Mr. Charles Oxley, of Pontefract, whose premature decease, in the midst of the fairest prospects of respectability and usefulness, affords an affecting illustration of the instability of the most firmly cemented fabric of human happiness. To my excellent friend Mr. Robert Whitaker, the paternal superintendent of the institution, I am greatly indebted, for the results of his minute and accurate observations, without which, it would have been scarcely practicable to have attempted the history of the fever.

The village of Ackworth is situated in an agreeable and fertile country in the West Riding of York, at about three miles from Pontefract. From the reputed salubrity of its climate, it was selected as the site of an extensive Foundling Hospital. That institution, however, meeting with a variety of unanticipated difficulties, was abandoned; and its very spacious and handsome edifice, at the suggestion of the late Dr. Fothergill, was purchased by the Society of Friends, in 1778, as a seminary for the education of the children of members not in affluent circumstances.

The general health of the establishment has been from the first remarkably good, a circumstance attributable not only to the salubrity of the situation, but also to the admirable domestic arrangements, and judicious discipline, uniformly adopted.

The only disease which appears endemic in the village of Ackworth, is bronchocele; but I am informed by Mr. Whitaker, that from a register of cases which have occurred in the school, it is not a particularly prevalent malady amongst the

children. This fact is interesting, whether we refer the comparative exemption of the inmates of the school from bronchocele, to the influence of domestic habits, and regimen, counteracting the operation of a *local predisposition*, or to the tendency of hereditary constitution, serving to perpetuate the disease amongst the inhabitants of the village,—while those assembled in the school from various parts of the kingdom, and therefore not characterized by any uniform constitutional bias, escape. Certain it is, that the inhabitants of the village and the school, partake of the same elements of air and water, peculiarities in either of which have been sometimes thought capable of producing bronchocele.

Since the year 1805, the school at Ackworth has been visited by four remarkable epidemics. In 1803, scarlatina prevailed during four months, and affected 170 persons. A minute description of this fever was given by the superintendent, Dr. Binns.* In 1824, continued fever appeared, and before the expiration of two months, extended to about sixty individuals. In 1828, the epidemic which is the subject of the present paper occurred; and in the spring of 1830, no less than 36 individuals were attacked by measles. The number of inmates belonging to the school is upwards of 300. At the period to which these remarks more particularly refer, the family consisted of 310 children and apprentices, and 29 adults.

The spring of 1828 was unusually productive of severe catarrhal and bronchial affections. Few of the children in the school escaped entirely; and the rapidity with which the disease spread, was not less remarkable than the debility by which it was almost uniformly marked. Many of the children had scarcely recovered from the effects of this disorder, when, about the 18th of May, *one* of the boys exhibited symptoms of ordinary fever. For many weeks, however, this was an isolated case. In the month of June only one fresh case appeared. About the end of the first week in July, the disease began rapidly to multiply. The annual meeting of Friends, however, assembling from different parts of the kingdom, was held at the school, in the latter part of that month. It was not until this time that much alarm was excited by the progress of the disease. About 66 cases of fever occurred during July, exclusive of those instances which will be more particularly detailed in a subsequent part of this article, of visitors being affected by a similar disease, on their journey from the annual meeting, or soon afterwards.

It was in the month of August when the fever appeared to

* Willan on Cutaneous Diseases. Edin. Med. and Surg. Journal, vol. ii. p. 379.

spread with fearful rapidity. From the 10th to the 17th of that month, no fewer than forty individuals were invalided, and the total amount of cases during the month was 100. At the close of August my professional assistance was requested; at which time there were about forty patients in bed, and from twenty-four to thirty convalescents. Of the former many were very severe cases, and exhibited the peculiar features of the disease in their more aggravated forms. From the first of September, only one additional case occurred. The malady seemed suddenly to decline, having extended to 183 individuals—more than one-half of the inmates of the house, of whom 96 were males, and 87 females.

The following table will exhibit a tolerably accurate statement of the number of admissions into the sick wards each week, from the 18th May.

1828.				MALES.		FEMALES.	
				Admissions.	Deaths.	Admissions.	Deaths.
From May	18 to May	25		1	0	0	0
— May	25 to June	1		1	0	1	0
— June	1 to July	6		1	0	0	0
— July	6 to July	13		3	0	5	0
— July	13 to July	20		8	0	6	0
— July	20 to July	27		10	0	8	0
— July	27 to Aug.	3		14	0	12	0
— Aug.	3 to Aug.	10		15	0	13	0
— Aug.	10 to Aug.	17		20	0	20	1
— Aug.	17 to Aug.	24		15	0	14	0
— Aug.	24 to Aug.	31		8	0	8	2
— Aug.	31 to Sept.	7		0	0	0	1
— Sept.	7 to Oct.	10		0	1	0	0
Total . . .				96	1	87	4

In reference to the preceding table, it will be remarked, that the greater proportion of those affected were females. At the time when the disease commenced, there were in the school 180 boys and 120 girls; so that the ratio of cases of females was nearly as 1.600 to 2.000, while of the boys, the proportion affected was about 1.050 to 2.000. The greater mortality amongst the females, will also not escape notice, *four* fatal cases of the former, and only one of the latter having taken place. The total amount of deaths was less than $2\frac{1}{3}$ per cent, an inconsiderable number, especially when we recollect the many instances of very severe fever.

With regard to the course of the symptoms, the following description will apply to the greater number of cases. For some days before any specific complaint was made, the patient would appear languid, and listless, and if in school, less disposed than usual to mental application. Slight headach was the first subject of actual complaint, and sometimes pains in the back

and limbs; but more frequently, an indescribable sense of aching and weariness. Vertigo, and some intolerance of sound, and light, were mentioned at a very early period. A sense of coldness was often felt at the invasion of these symptoms, but seldom very marked rigors. The tongue was soon covered with a milky-looking fur; some thirst prevailed; the skin felt rather above the natural temperature; and the bowels were constipated; nausea and vomiting were scarcely ever present at any period. In every case there was a remarkable prostration of the animal powers, and great depression of spirits occurring within two or three days from the development of the first symptoms of excitement.

The average duration of the slighter and more ordinary forms of disease, was from a week to fifteen days. It did not appear to be regulated by any critical periods. The expression of the countenance gave one of the first indications of the return of health. With the return of cheerfulness, a gradual desire of food, and a disposition to natural sleep, were the usual concomitants.

In the preceding description, we have included probably two-thirds of the aggregate cases, or about 130 out of 187. The remaining portion exhibited the same symptoms in a more aggravated degree, and in combination with others, indicating a far more serious disease. Ushered in by the same premonitory circumstances, in two or three days, they presented a very formidable aspect. The headach was more intense; there was great torpor, and obtuseness of the senses, so that the patient would only intimate, on being powerfully roused, that he had much pain in his head. The countenance was marked by an expression of peculiar vacuity. Sometimes the patient was exceedingly restless; more frequently there was a constant drowsiness, interrupted occasionally by low muttering delirium, or by the ejaculation of loud and sudden screams. In these circumstances, the mouth and tongue became dry, and encrusted with a thick, fuliginous sordes; the breath emitted a disagreeable halitus; the eyes appeared sunk and glazed; and the conjunctiva deeply suffused. The *articulation of speech* was impaired or lost in a great number of cases. *Deafness* was a very frequent symptom; next to this *blindness*. *Strabismus* appeared in two or three instances, which, however, recovered; and in one case a complete *hemiplegia* gradually supervened in the progress of the fever, denoted by entire suspension of the power of the right arm and leg, falling of the upper eye lid, and contraction of the mouth. With the subsidence of fever, these symptoms also disappeared. *Violent tremors*, and *convulsive twitches* of the

muscles continued in some cases for two or three days. The state of *coma* was seldom so complete as to deprive the patient altogether of sensation, and the power of voluntary motion. When roused by an adequate stimulus, the existence of these faculties was sufficiently indicated. In some of the worst cases, *grinding of the teeth* was a very distressing symptom. The pulse generally varied from 100 to 140, and was weak and compressible.

Such is a brief semiography of the severer class of fevers,—of course differently modified in the several cases, but in all preserving a remarkable identity of character. Many of them continued in this state until the third or fourth week, and in a few instances nearly two months elapsed before the patient was able to sit up. Recovery was now and then retarded by sloughing of the back, but only three or four cases of marked relapse occurred, which seemed referrible to excess in diet, the difficulty of regulating which is not inconsiderable, notwithstanding the cautions of the physician, when the appetite is restored before the powers of the stomach are recruited. The only fatal case of relapse was the melancholy one of poor Henry Brady, who fell a victim to the effects of premature exertion, and taking cold after his recovery from the first attack.

The complications of fever with local disease were not very numerous. The tonsils were sometimes inflamed and swollen, producing a troublesome angina. Inflammatory affections of the chest were not altogether rare. In the two first patients, severe bronchial attacks coexisted almost from the first. This combination of local disease might sometimes be traced to a debilitated state of the organs, induced by a former attack, or to some other kind of predisposition. In the case of Jane Pegler, ætat. 14, whose recovery was for many days extremely doubtful, in consequence of the urgency of her bronchial symptoms, it was ascertained that some years previously she had been affected by an acute disorder of the chest, and that two of her sisters had died from consumption. The frequent complication of this class of complaints with fever was, no doubt, greatly referrible to the previous catarrhal complaint already mentioned. Cough proved troublesome so often *on the declension of the fever*, that this symptom occurring at a late period, was at length regarded as a favourable omen. Abdominal phlegmasiæ were less frequent. Tenderness on pressing the body was sometimes complained of, and diarrhœa was now and then found a troublesome occurrence. Intestinal hæmorrhage took place in three or four cases, one of which was fatal soon afterwards. In the other instances, it was of no other consequence than from the debility which seemed to ensue.

The general character of the disease may be well illustrated by the following cases, the outlines only of which I shall attempt to give.

August 15. *William Martindale* complained of slight headach, chilliness, and want of appetite. Pain in the head increased, thirst, tongue coated with white fur, skin hot, pulse 120; great depression of spirits. Leeches to the temples: purgatives. 19. Pain in the head more severe, great depression of spirits, averse to answer questions, some thirst, restlessness alternated with drowsiness. Leeches again applied, cold application to the head, purgatives and salines. 20. Still complains of his head, as the seat of pain, raves much, especially during the night; skin cool, bowels natural, pulse 120. No cough, nor abdominal tenderness. He continued, with little alteration, until the 24th, when his articulation began to falter; had some difficulty in swallowing; tonsils inflamed and slightly aphthous. 25. Quite speechless, and apparently insensible to sound; pupils dilated, passes his motions involuntarily, pulse very weak and frequent. 26. Nearly entire coma, face pale and expressive of much languor, lips and tongue covered with a hard and black sordes, head and general surface cool, evacuations mixed with blood.

This patient continued several days subsequently, in a state of extreme languor, refusing all food; the introduction of the smallest quantity of which was rendered extremely painful by the ulcerations of the throat. By the administration of strong broth injections, with brandy and wine, a fatal catastrophe, which, for many days, seemed almost inevitable, was averted. His recovery, though ultimately complete, was very gradual.

August 19. *William Woolston*, of spare habit, attacked with violent headach, followed by great prostration of strength, thirst, pulse frequent and small; bowels constipated. No remarkable symptom occurred in the progress of this case, until the 28th, when he presented the following symptoms: Head hot, intellectual powers greatly impaired, speaks very indistinctly, deafness, muttering, delirium; face flushed, eyes have a glassy brightness, papillæ of the tongue prominent, its edges red and glazed; black sordes on mouth and lips; motions involuntary. This state had continued for several days; from which, however, he gradually recovered. The medicine under the use of which he seemed to make most progress was the quinine sulph. with small doses of tinct. opii, frequently repeated.

Philip Derbyshire, rather stout, began, August 20, with headach, and the usual symptoms, and in a few days became comatose. 28; Countenance anxious, pupils dilated, speechless, grinding of teeth, skin cool, tongue nearly clean: pulse 120, very feeble, slight cough, sloughing on the back. With the aid of wine and quinine, this patient was convalescent at the close of a month from the date of the fever.

Isaac Marsh, August 17. Began with chilliness almost amounting to rigors; headach. 23; quite insensible, stools involuntary, deaf-

ness, rigidity of the limbs. 29. Countenance expressive of distress, eyes wild, grinding of teeth, which are encrusted with dark sordes; tongue præternaturally red and dry, slight cough, skin cool, pulse 112—weak. He slowly recovered in the course of the following month.

Joseph Allbright, was seized with fever, early in July. Headach was severe, followed by loss of sight, abolition of the mental faculties, and coma, continued under the graver symptoms of the disease a month, and only recovered perfectly at the expiration of the tenth week.

Thomas Allis, August 29, complained of chilliness and great debility, without headach. In the course of his attack he had slight cough, his abdomen became slightly tumid and painful, his tongue was nearly clean; pulse 120, thready and weak; occasional delirium; face flushed. He was ill about five weeks.

Martha Derbyshire, stout and plethoric, was attacked August 17, with pain in the head, intolerance of light and sound, and other symptoms of more intense excitement than have generally characterized the fever. 25th, coma, deafness, involuntary discharges, difficult deglutition. 30th, Noisy delirium, and great restlessness; frequent screams; pulse 120, feeble; skin hot and dry; cheeks flushed; eyes suffused. She recovered perfectly in about six weeks.

M. A. Head, August 24, had headach, coldness and great languor. 28th, Total deafness, coma, and involuntary evacuations. Though a severe case, and more rapid in the accession of graver symptoms, this patient was convalescent at the expiration of a fortnight from the attack.

It would be impossible, without becoming prolix, to venture much further upon details of this nature. I have selected only a few cases, amongst the most marked, and must satisfy myself with having delineated their general features, as a sufficient illustration of the subject of the paper.

Before, however, I leave this part of the statement, it may be interesting to advert very briefly to the fatal cases. The first victim to the fever, was

Hannah Fairer, ætat 14; she was tall and thin, but had not been particularly delicate during the time of her abode in the school, a period of about a year and a half. Her commencing symptoms were headach, drowsiness, and great loss of strength. There was no particular local affection; the bowels were in general regular, and the evacuations natural. At the expiration of about five days from the time of her confinement to bed, she became quite deaf, and lapsed into a state resembling perfect coma. *Petechiæ* were general over the surface on the sixth day, and she expired in a state of apparent exhaustion on the eighth day. This event happened on the 16th of August.

Mary Dumbleton, ætat 59, nurse, had been resident at the school twenty years. In consequence of the extraordinary fatigue and

watching which had devolved upon her, as nurse, for three successive months, her general health was greatly impaired when she was seized with fever about the 17th August. Her first symptoms were great weariness and loss of strength; the pain in the head was very moderate, and there was not much heat of skin. She had violent perspirations which continued from day to day. Deafness supervened a few days from the attack, and during the last four days preceding her decease, she had considerable pain and tenderness in the abdomen; and the stools were mixed with blood.

Mary Ann Drewitt, (from Croydon, in Surrey) delicate, and of slender make, ætat 10 years; complained first on the 10th of August. The early symptoms were mild, consisting chiefly of debility, depression of spirits, slight febricula, not much headach. As the fever advanced, great weakness ensued; she became very restless and irritable; and towards the close she was almost in constant agitation, raving day and night, with scarcely any intermission. There was slight diarrhœa in the commencement, and again towards the close; and she complained of universal soreness. She died, August 29th, eighteen days from her first taking her bed.

Mary Cleminsha, (from Liverpool) ætat $12\frac{1}{2}$ years, stout and of florid complexion; was taken ill about August 3. The cephalic symptoms were severe from the first. The pain in the head was extreme, and seemed not much relieved by bleeding. At the end of four days from the time of her taking her bed she became delirious, and two or three days subsequently, she lost the power of articulation. The delirium increased, with constant jactitations of the body. At the end of the second week, she became more tranquil, but seemed greatly exhausted. The pulse was frequent and feeble; there were coma with tremors, and subsultus; and she died on the 20th of September.

The last fatal case which happened, was of a peculiarly melancholy description, not only because it deprived the Institution of a most valuable teacher—an individual whose varied intellectual, and moral excellencies had attracted towards him an unusual portion of esteem—but because it arose from a relapse, and happened at a period when the friends of the Institution were congratulating themselves on the restoration of the general health. Mr. *Henry Brady*, ætat 30, of rather delicate health, which had been rather impaired by close attention to the duties of his office, as teacher, and by hard study at night. He complained to me of slight indisposition, on September 30th, at one of my first visits to the school. He was, however, at that time, going about the establishment, though he always slept in his own house, at the further extremity of the garden and play-ground. He was requested to rest immediately at home, and placed under regular medical attentions. His complaints were of the ordinary kind, in a mild form. The pain in the head was very inconsiderable. He was occasionally flushed, had some thirst; tongue at first whitish, afterwards rather dry and glazed; pulse from 90 to 110, feeble; tremors; deafness; some obtuseness of intellect, but no active delirium. He was convalescent on the

15th of September, and so far recruited in strength on the 20th, that with the assistance of his wife's arm he ventured that day to walk up the garden to the school. In the evening he felt some chilliness; passed a restless night: and the following day had a renewal of all the febrile symptoms in a severer form. In addition to these, he was affected on the 22nd with uneasiness in the abdomen, and some diarrhœa. 27th.—Great deafness; occasional delirium; subsultus tendinum; pulse 130; abdomen painful and tumid. He became comatose; and died on October 9th.

This account would have been much more complete and satisfactory, could we have annexed to each case a post-mortem examination. Notwithstanding the enlightened wish of many principal individuals connected with the establishment, to have every circumstance investigated which could elucidate the disease, there were considerations sufficiently powerful to induce them to discourage any researches of this nature. Valuable, however, as in all cases is the light of pathological anatomy, it should not be forgotten that, in cases of fever, it sometimes yields discoveries which, though highly important, and useful in the treatment of particular symptoms, can justify no conclusions as to the *cause* of disease. The appearances presented on dissection, are often the *effects* of disordered actions which have supervened on that morbid process, which constitutes fever, not, as they are too frequently regarded, the *essential local and initial* source of the peculiar phenomena.

Three of the fatal cases were evidently complicated with inflammatory affections of the bowels. In Mary Dumbleton there was towards the last stage, "great pain in the bowels," and sanguineous discharge, probably from ulceration of the mucous coat. *Diarrhœa*, with tenderness of the abdomen, existed in case 2; and the death of poor Henry Brady, appeared to arise less from the ordinary symptoms of fever than from the secondary affection of the intestinal canal, at first confined, as denoted by the absence of pain and diarrhœa, which occurred with the relapse, to the mucous coat; but soon extending, as may be inferred from the great enlargement, acute pain, and exquisite tenderness of the abdomen, to the other tissues. In the first and the third case, the fatal termination was more ostensibly connected with *affection of the nervous system*, and was occasioned less by the supervention of mortal coma, than by the total prostration of the powers of life, indicated by the feebleness of the pulse, and the gradual failure of the capillary circulation.

We have hitherto described the fever as it was exhibited within the precincts of the school. One of the most interesting features connected with its history is, the circumstance, that though in reference to the village, and the surrounding neigh-

bourhood, there existed no contemporaneous epidemic, that many individuals who visited the establishment at the annual meeting were soon afterwards the subjects of fever, corresponding in all its essential characters with the prevalent malady of the school.

The annual meeting took place at the end of July, at which time there were nine or ten patients confined to bed. No suspicions being entertained as to the existence of an infectious disease, no particular prohibition was enforced relative to intercourse with the sick. It would appear, however, that even at that time the visitors were generally requested not to enter the sick rooms, though no positive interdict was enjoined. I cannot better describe the result of the annual meeting than in the words of my intelligent friend Mr. Robert Whitaker. "Several friends of mine (says he) were here in the end of the 7th month, attending our general meeting, all young persons but one. *They did not lodge in the school*, nor did they visit the sick rooms, but they went about the house, and upon the premises for three days. On their return home, one of them, Sarah Binns, aged about twenty-two, was taken ill with fever, and was laid up at the house of her sister, near Bolton-le-moors. The symptoms were the same as those which occurred in the cases of our patients, and her recovery was slow and very long protracted. Her mother came from Liverpool to wait upon her. She also took the fever, and was confined a short time; but the attack was not so severe as her daughter's. Another or two of the same party were attacked with fever, after they reached home, but they soon recovered. Another individual, — Cooke, of Liverpool, was at our general meeting: he also took the fever, and was long in a critical state. Another afflicting case occurred, of William Beavington, from Stourbridge, Worcestershire, who attended the general meeting, and stayed here about three or four days. After he reached home he sickened with the symptoms which had marked our fever; and died at the end of a few weeks. Rebecca Dickenson, from Shropshire, attended our meeting, from which she went to Darlington, where she was attacked with fever similar to ours, and lived only a short time. Another visitor, Anna Backhouse, of Darlington, was attacked violently with fever, in which she continued a long time, but from which she recovered perfectly. But one of the most melancholy cases, was that of a family at Shelbrook, a village about six miles off. The father, John Green, attended the general meeting here, and after the meeting, he walked about in our house, but did not enter any of the sick rooms or nurseries, as we call them. In a few days afterwards he was seized with fever, which was

severe, but he eventually recovered. Before he was restored, a daughter, aged thirty-two, and a son, twenty-eight, took the complaint; and both died. Three others of the family had the fever, and recovered. Several other cases have come to my knowledge; but I think those already given are sufficient."

The circumstances attending the cases of the family at Shelbrook, were altogether so remarkable that I addressed a series of inquiries to my friend Dr. Marchant, of Hemsworth, one of the medical attendants on the family; from his obliging answer to which, I select the following passages.

"With regard to the fever at Shelbrook, I cannot charge my recollection with observing any thing peculiar in the progress of the disease from the ordinary course of *continued fever*. When I was called in, the father, who began first, was convalescent; the eldest daughter dead; the eldest son so ill, particularly from a high state of cerebral disorder, that I could not anticipate any thing but an unfavourable termination. He also died in a few days, in spite of all the approved means which I tried to lessen the great oppression of the brain. There were two other cases in the house which went through the disease very favourably, and did not require any other treatment beyond mild purgatives, aided by a fresh atmosphere. From what I noticed when first called in, the admission of fresh air had been miserably neglected, and owing to which I mainly attributed the cause of the fever spreading to every individual within the house; the servants or labourers working about the premises, not having any communication with the invalids within, escaped the disease." "The other case" says Dr. Marchant, "was a young man in service: the fever was in his master's house. When he sickened he was sent to his own house, situated in a village ten miles off, where I don't recollect ever seeing a case of continued fever before this, or since; and where no local cause could operate to produce it. The *disease was communicated* to two brothers and a sister, preserving all its essential characters through every stage. Though they were surrounded by neighbouring houses, not one individual out of the house took the fever."

We arrive now at the most interesting inquiry connected with the present subject. What was the origin of the fever? and by what means was it diffused?

The operation of the two causes most commonly assigned for the origin of epidemic fever, improper nourishment and cold, are here totally excluded. The diet* of the house was, in every

* For breakfast, the children have always milk porridge poured upon bread, at 8 o'clock, and for dinner, at 12 at noon, meat, vegetables, and bread, four days; and

respect, as abundant as usual, and in no respect less nutritive. The temperature of the atmosphere, when the disease occurred, was not below the average; having a mean of 61 degrees in July. In illustration of the meteorological character of the season, I am fortunate in being able to subjoin the testimony of my friend Mr. Luke Howard, who resided at Ackworth during the period referred to, and whose authority on such subjects is, by universal consent, of the first order.

Respected Friend,—The summer of 1828 was, in these parts of the island, wet beyond all precedent. In the month of July there fell at Ackworth above 9 inches of rain, on the mean of two gauges, about a mile apart from each other. It rained more or less on 26 days out of the 31: the wettest day being the 9th, when there fell in 24 hours more than 2½ inches.

The greatest amount of rain in this month, in 14 years, at London, is 5.133 in. which happened in 1806; the *average* of rain for the month is 2.637. See *Climate of London*, vol. ii. p. 192. Ackworth is found to agree more nearly with London in its meteorological results than, from the difference of latitude, might at first be supposed; the present year, in respect of the rain, will, however, probably furnish an exception.

It is remarkable that, in 1825, *August* was the wettest month of the warm season, giving 3.28 inches; in 1826, *September*, which yielded 5.10 inches; and in 1827, *October*, which afforded 5.81 inches. Thus, for three years preceding the event in question, the summer rains fell later and heavier each year; but in the present year they reverted at once to that season in which our own rains appear to be connected, in some measure, with the Solstitial ones, in countries far to the southward of us.

The month in question presents an *average Temperature*: the mean of the month being 61.07°, and the hottest day 79°; whereas in 1827 (to go backwards) the mean of July was 62.71°, the greatest heat being 83°; in 1826, it was 64.72°, and the greatest heat 89°: thus, for three years the *temperature* of July was declining.

The mean annual rain at London is about 25 inches. See *Climate of London*, vol. ii. p. 192. In 1825, there fell at Ackworth 24.22 inches; in 1826, 18.74 inches; and in 1827, 23.86 inches; so that the present was preceded by two *average*, interrupted by one *very dry*, season. I suppose that, at the commencement of the very wet time in question, the earth was impregnated with much animal and vegetable matter, in a state to pass rapidly, upon the addition of a sufficient quantity of water, to the putrid fermentation. This would furnish of itself an abundant *malaria*; in addition to which, we must take the probable exhalation from the water which came down the country, and, overflowing the channel of the *Went*, lay for many days at intervals, in the meadows; with the mown grass taken in process for hay, floating in it. The school (though situated high enough) had many acres of such water near it, in different directions, and in particular at the time of the General Meeting.

The *Barometer* was low for the time of year: the mean of July was 29.64 inches, instead of about 29.88. It declined from the beginning to the 12th, (in the midst of the heaviest rains) after which it rose gradually to the end of the month; the lowest point was, by the school register, 29.14 inches, with the wind at south west.

The *Winds* during the month were mostly, by day, from the westward; with a mixture of *east* twice, and again of *north* towards the end.

The change from previous dryness to a moist, sultry, relaxing state of the air, was very sensible. On the whole, the season presented several concurrent circumstances, which might operate as predisposing causes of infection. Both the healthy stimulus of a dry, hot air, and the invigorating effect of a full pressure were withdrawn—

pudding boiled or baked, or fruit-pie the other three days. Their drink, beer and water. For supper, bread and milk, bread and cheese, or bread and butter, at six in the evening.

and there was certainly present much of that quality in the air, to which the origin of *Remittent* fever has been often attributed. It is not to be wondered at, under such circumstances of climate, with several patients in fever already in the house, *with whom intercourse on the part of the visitors was freely permitted*, if many departed from the meeting (held on two successive days in the house) under infection, and others who remained longer, also took it.

It will be seen that in these observations I am proceeding on the supposition (derived on my part, I think, from what my esteemed friend Doctor Hancock of London has said in his 'Researches into the Laws and Phenomena of Pestilence,' that a degree of infectious impregnation, which in a dry air is harmless, may, in a warm and moist atmosphere, be communicated to numerous subjects, and thus become an epidemic. And I suppose that, in seasons like the three which preceded the last summer, the same assemblage of persons might have met (even with the same patients in the house) with impunity.

I am, Doctor, thy sincere Friend,

LUKE HOWARD.

Ackworth, 10th Mo. 24th, 1828.

That the quantity of rain which fell had some influence in facilitating the propagation of the fever, is also probable from the fact, that in the year 1824, when a similar fever prevailed at the school, an extraordinary quantity of rain was recorded, being for that year 30.51 inches, for 1828, 32.35.

There are only two suppositions by which the phenomena can be explained, the existence of a *malaria* or of *contagion*: and there are circumstances in the preceding statement which might be adduced in support of either hypothesis.

In estimating the relative operation of two such subtle agents as contagion, and local noxious influence, or malaria, where demonstrative evidence is scarcely attainable, much is left to probable reasoning and analogy, and unless we could be in circumstances where the agency of *one* of these causes must be *necessarily* excluded, we cannot arrive at any certain conclusions relative to the laws which govern the other. Occult in their very nature, in the production of disease they may tend still further to obscure and complicate each other. Without asserting dogmatically either of these hypotheses, it is not contrary to the facts of the present epidemic, nor inconsistent with our limited knowledge of such agencies to suppose, that however generated in the first instance, the disease was disseminated, by some injurious atmospheric influence peculiar to the place, and that, in the course of its progress, it acquired a contagious property, by which it was still further diffused and perpetuated.

In favour of the idea of *malaria*, may be alleged, the want of evidence of intercourse between any members of the family belonging to the school, and persons labouring under fever. At the time referred to, it could not be ascertained that there was any instance of similar disease in the neighbourhood, whence it might be imported into the house; and also that the intercourse existing between the healthy members of the family,

(after the fever was considerably diffused,) and the sick, was too inconsiderable to admit of the disease being propagated by contagion, agreeably with the known laws and limits of that influence of free ventilation.

The difficulty of the hypothesis of contagion is still further increased by the fact, that, amongst the visitors at the annual meeting, several individuals were seized with the complaint who never slept in the house, nor went into the rooms where the sick were confined.

On the other hand, there are many striking facts in the preceding history which point to contagion as a principal cause of its diffusion, and which cannot be explained on any other supposition.

The notion of the disease having a *contagious quality* from the beginning may derive considerable probability from the history of the fever.

I. The disease commenced in a *solitary instance*, and, at the expiration of six weeks, there were not more than three fresh cases. Had it originated in malaria, it is more consonant with our views of the pervading influence of such a cause, to suppose, that it would have appeared simultaneously or in rapid succession in several individuals, as they were all equally exposed to the local circumstances. The first patient was, however, to a certain extent separated from the family; two or three others became infected; and, as the cases multiplied, the sources of disease increased also in an equal ratio. It will also be remembered, that it was not until about the termination of July, when the cases had become very numerous, having increased to upwards of seventy, by which period it is not unreasonable to suppose that the contagious miasmata might be augmented, not only in volume, but (as it has been often observed in the progress of diseases which are unquestionably communicable) in virulence. It was at this time also when "intercourse between the visitors and the sick," in the language of Mr. Howard, "having been freely permitted," many of the former, only a few days afterwards, exhibited the precursory symptoms of a similar disease.

II. The supposition of the disease having originated in contagion, is still farther supported by the occurrences of a former epidemic at Ackworth, which, in its pathognomic features, remarkably resembled the fever of 1828. In illustration of this, I cannot do better than quote Mr. Whitaker's description of that fever, which, as far as evidence in such a question can be decisive, was distinctly traceable to infection.

“What I recollect of the fever which visited the school in the autumn of 1824, and part of the winter following, and the particulars collected from documents which have been preserved, are as follow :—

The fever commenced towards the end of the 10th month, 1824, with one of the mistresses. She had been a frequent visitor at a house in the village, where some of the inmates had been confined with fever for several weeks. As the nature of the complaint was not then known, or even suspected, no pains were taken to keep this first patient apart from the rest of the family. Her illness was attributed to taking a quantity of black drop; but the sequel proved that it was the fever. The disease spread gradually, not only among the girls, but among the boys also, and its doing so might easily be accounted for, by one of the masters, who was early attacked, and who died of the complaint, having also been a visitor in the sick family in the village.

The master whom we lost, died on the 30th of the 11th month, 1824, after an illness of about two weeks.

We lost two girls also in the former illness, about the middle of the 1st month, 1825, after they had been ill about two weeks each.

About sixty children, and the two teachers above alluded to, had the complaint; but it appeared to die away in the end of the 1st month, 1825; so that its continuance was much shorter than the fever of 1828.”

III. The hypothesis of contagion is still further countenanced by the analogous phenomena which characterized the history of the scarlatina in 1805—a disease, confessedly propagated by a specific contagion. That epidemic, like the present, occurred when the scarlet fever did not exist in the neighbourhood: “six months before it took place,” says Dr. Binns, “it came to our very doors without affecting any one in the house. It began in a single instance, a boy: at the expiration of twelve days, two others were infected, a boy and a girl, who having no direct communication with the other, must have been infected by “communication with persons who visited the sick.” In several weeks the disease made comparatively slow advances, but then multiplied with sudden impetuosity. In the course of four months 179 individuals received the disease.

IV. But the most decisive evidence in favour of the contagious nature of the epidemic of 1828, is the fact, that similar diseases were imported from Ackworth to distant places where no affection of the same kind existed, and there developed their peculiar quality: by being communicated to individuals, who had never been subjected to the *injurious local influence*, to which its origin was ascribed. If the proofs that the visitors at the general meeting received the disease by contagion, are deemed insufficient, it will be at least admitted in reference to the

mother of Eliza Binns, who came from Liverpool, to attend on her sick daughter at Bolton, and was soon afterwards the subject of the same fever herself; but above all to the cases of the Shelbrook family, the eldest member of which, having visited the meeting at Ackworth, returned to his house, six miles distant, was taken ill, and communicated a similar disease to the whole of his family; and to the instance of the relations of the young man mentioned by Dr. Marchant. The evidence derived from such facts must satisfy the most cautious, that whatever might be the character of the disease at its commencement, it acquired a contagious quality in its progress. We have here that kind of evidence, which a most philosophic writer of the present day requires to justify the belief in contagion. "If I am asked, (speaking of the disease of the Penitentiary,) what would go to the full proof of contagion, I should say, nothing less than this, viz. that various persons, under the actual symptoms of the disorder, having been set at liberty, various people, with whom they had intercourse in the several situations to which they resorted, had been seized with symptoms precisely the same."*

That in all the cases there was increased vascular action, there can be no doubt; and that, in reference to the brain, this state at least strikingly approximated to inflammation, appears equally evident. The headach, delirium, drowsiness, spasmodic tremors, and, in the case of Symmons, the paralysis, clearly indicate an intense brainular affection. But was this of the character of ordinary inflammation, and if so, was it the *essential local origin* of the fever? We think not, for the following reasons:—In many cases of severe fever, the affection of the head was only slight; and, in the fatal cases, death was not always connected with a greater urgency of cephalic symptoms than was evinced in those who recovered, but in four cases out of five, seemed to depend either on the greater depression of the vital powers, or on affections of the bowels *supervening* in the progress of the fever. The case of Mary Clemenisha, who was stout and plethoric, might seem to favor the brainular hypothesis: but even in her case, there was that marked and characteristic depression long after the violent symptoms had subsided; so that the most that can be inferred from it is, that inflammation of the brain was only *an accidental complication*; and, lastly, the effects of remedies in this epidemic, strikingly demonstrate, that the disease which had to be attacked, was very different

* Latham on Penitentiary Disease, p. 238.

from phrenitis. In several of the most aggravated cases, perfect recovery took place either under a negative, (or when the pulse was very feeble,) a gently stimulating plan of treatment; and in other cases, when the phrenitic symptoms were most intense, little or no advantage seemed to be derived from active remedies, as the general or topical abstraction of blood. With respect to inflammatory disease, or irritation of the mucous surface of the bowels being the *initial point* of the fever, we have, in the general absence of abdominal pain, and tumidity, and diarrhœa, evidence sufficient to invalidate such a conclusion.

Whether we account for the *extraneous origin* of the fever by supposing a subtle malaria or morbid miasmata, the disease must have been introduced into the system either by absorption through the lungs into the circulating fluid, or by acting immediately on the sentient extremities of the nerves. Unfortunately, the nature of the subject will not permit us to advance much farther than theoretical speculations. That the first impression was made on the brain and nervous system, may be fairly inferred by the languor, debility, and chilliness which were the universal precursors of the fever, resembling in their phenomena the effects of certain narcotics, as prussic acid and hyoscyamus when applied in the same way to the animal economy. By whatever means the healthy condition of the nervous system was disturbed, it is clear that the functions of the various organs must soon participate in the derangement: and it is not difficult to conceive that any organ particularly predisposed, might, under these circumstances, become the subject of inflammation.

The adoption of either hypothesis, that of a malaria or that of febrile miasmata, will not preclude the operation of certain occult changes in the air itself, or, in the language of Sydenham, of a particular *atmospheric constitution*, without the intervention of which the whole doctrine of epidemics would remain still more inexplicable than it is. Admitting this principle, we may conceive, why an atmosphere of *concentrated contagion*, may at certain periods prove almost innocuous, while at other times an air of very *dilute contagion* may be abundantly prolific of disease. We also perceive an adequate cause for one of the most remarkable phenomena connected with the history of the present epidemic, the very rapid rise and the apparently sudden decline of the fever.

With regard to the *treatment*, I must be necessarily very brief. In the early stage of the disease bleeding, chiefly with leeches, moderate purgatives, salines, and throughout its course, when the heat was excessive, tepid sponging of the

body and cold applications to the head. The head was often shaved and the feet immersed in warm water. The period for antiphlogistic means was soon past. The frequent repetition of evacuating means, was not often productive of benefit, or seemed decidedly to do harm.

Many severe cases indeed, as it has been already adverted to, recovered almost without the use of methods strictly therapeutic.

In a few instances of high excitement the use of antimonials was attended with advantage. Blisters were applied to the nucha sometimes, when there was great oppression and coma.

In the advanced stages of fever, where great prostration of the powers was present, the administration of diffusible *stimulants* especially ammonia, small quantities of diluted wine, and even weak brandy and water, was often followed by marked benefits. Under these circumstances the experience of the Ackworth fever strikingly coincided with the remarks of Dr. Alison,* on the epidemic of Edinburgh, in 1827. "The pulse," says he, "notwithstanding the fallacies so often attributed to it, has appeared to me a much safer indication of such strength of the circulating system as demands evacuation, than the heat of the skin. I have seen the heat in various cases as high as 103, and 104, when the pulse was soft and feeble, and the disease advanced, and when gentle stimulants appeared to me to be required, and were used with success."

With regard to the particular local seat and nature of the Ackworth fever, it is difficult, in a communication like this, to offer any remarks, as they would involve a discussion of the pathology of continued fever in general, and in the present instance could not be facilitated by any contributions from morbid anatomy.

From the phenomena of the Ackworth disease, and the effects of remedies, it is conceived that neither of the prevailing hypotheses of the present day, will derive much support, either that which attributes fever to peculiar inflammation of the brain, or that which refers it to irritation or inflammation of the mucous membrane of the intestinal canal.

In the still more intractable forms of debility, the sulphate of quinine was found a most valuable resource; and in the least urgent cases, the infusions of cascarilla or calumba, alone, or conjoined with one of the mineral acids, were extensively employed. Of the value of nutritive enemata, containing wine

* Edinburgh Medical and Surgical Journal, vol. xxviii., p. 254.

or brandy in some cases of apparently hopeless exhaustion, it would be impossible to speak too highly.

The facilities of *ventilation* being nearly unlimited, its remedial and prophylactic agency was, of course, in full requisition. Solutions of the chlorides of lime and soda, were also *liberally* used throughout the premises; but I am not aware that the trial afforded any decisive proofs of their disinfecting property, though their employment contributed greatly to the comfort of the inmates.

I cannot bring this imperfect sketch to a termination, without recording the kind solitudes, the unremitting assiduities, and the judicious arrangements of those, on whom the management of the school and the care of the sick devolved, during this trying period. To *one* of the *medical* officers, an allusion has been already made. To his surviving professional colleague,* not less than to himself, the institution was greatly indebted for those skilful attentions, to which the comparatively small mortality of the fever is attributable.

A review of the preceding statement suggests many reflections, on which the limits of a periodical journal will not allow us to enter.

Intending, on some future occasion, to resume the subject of fever, more especially in reference to the results of hospital practice, I shall forbear at present making a farther demand on the patience of my readers.

ART. XIII.—*Contributions to Morbid Anatomy*. No. 1.

By JOHN WOODCOCK, Surgeon, Bury, Lancashire, Member of the Royal College of Surgeons of London: Licentiate of the Royal College of Surgeons, and Member Extraordinary of the Royal Physical Society of Edinburgh.

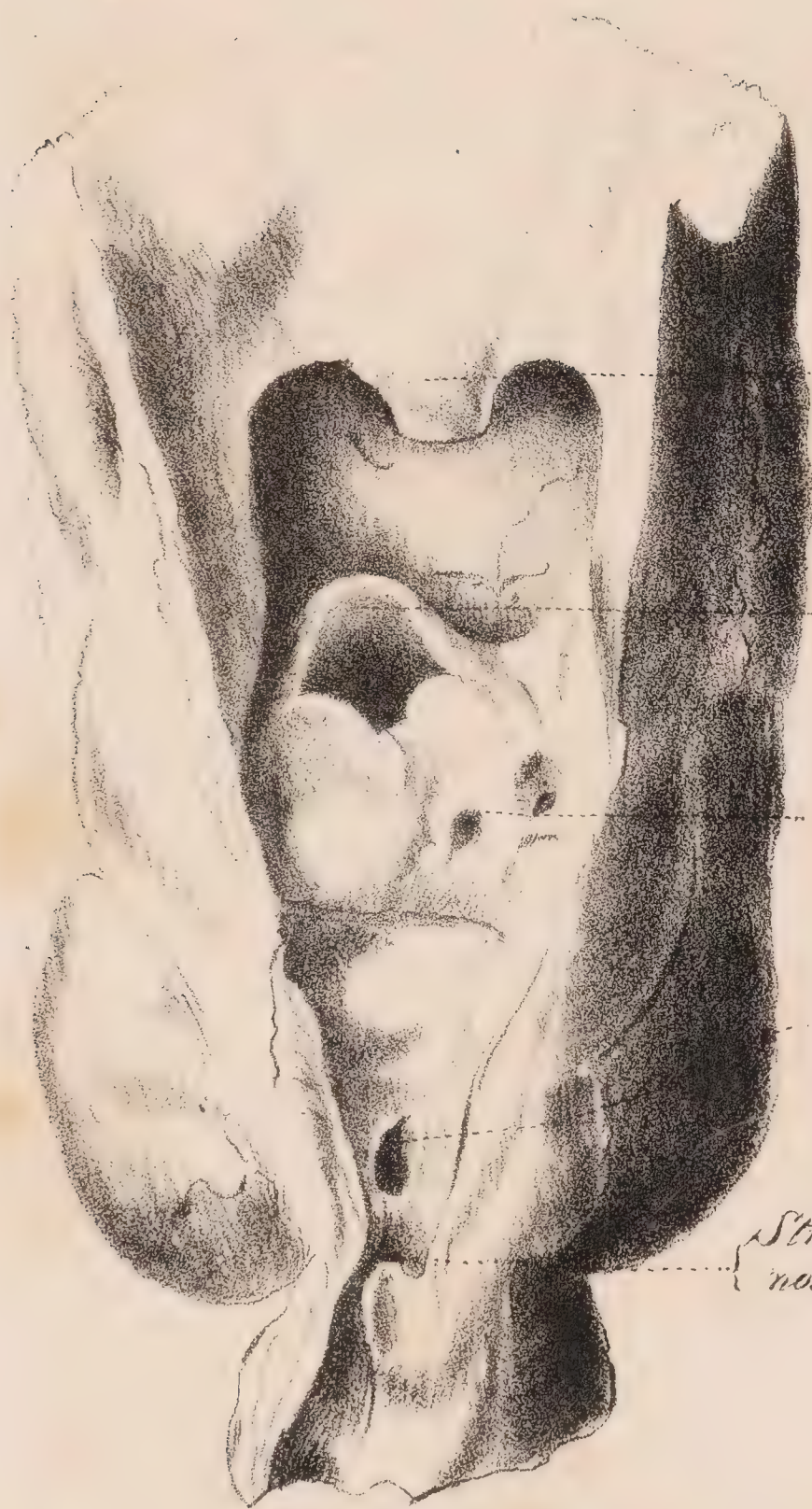
UNDER the title of *Contributions to Morbid Anatomy*, it is my intention to give you occasionally a short communication illustrative of organic change in some portion of the human frame, accompanied with a drawing showing the change in structure which it is my object to explain.

Although my opportunities of examining the changes produced by disease have not been so extensive as I could have wished, yet I hope I have not been altogether negligent of those which have presented themselves to me, and also in taking advantage of the artists which it has been my good fortune to meet with at the

* James Muscroft, Esq., Pontefract.



M^r Woodcock's Case of Cancer of the Rectum.



Urula.

Epiglottis.

Ulcerations.

Deep cul de sac.

*Stricture of the Æsophagus
not admitting a Probe.*



moment ; for often in a few hours, and in general a few days, those appearances which it is the wish of the morbid anatomist to convey, vanish, or the interest which was excited in the first instance is allowed to subside, and the advantages to science which might have been gained are gone for ever. It is not one man, however numerous his opportunities may be, that can form a complete collection of illustrations of disease even upon one subject ; for it is in this, as in many of the arts of common life, where the humble, and frequently insignificant labourer is necessary to the formation of a perfect whole.

For some of the drawings I was indebted to my very ingenious friend Captain Brown, of the Forfar Militia, at that time stationed at Bury ; whose skill as an artist and man of science has since been sufficiently proved by his valuable work on conchology and natural history.

The case which is the subject of this illustration is Cancer of the Rectum, which has generally been considered a disease of the middle or more advanced stage of life ; but in this case it occurred in a youth of the age of 15, who had not been subjected to those changes which are considered necessary to the full development of scirrhus cartilaginous ulceration.

The subject of the following communication was J***s H**t, of this place ; he was tall and slender, had a little stoop in his gait ; of a peculiarly sallow complexion, of sedentary habits, and for his years and opportunities of improvement, very intelligent. He had been injured some time before by the passing of a small carriage across his abdomen, to which he attributed all his ailments. At the time when I was requested to visit him he laboured under the following symptoms. A continual tendency to diarrhœa, with frequent discharge of blood, constant tormina and tenesmus, which had not been relieved by any diet, and very little by any remedies which he had taken. The tendency to evacuate was frequent, and generally instantaneous. He gave me the following history of his complaint. From a child he had always been of a very loose habit of body, but since he had received the injury, his motions had been ejected so suddenly, that he complained that whatever diet he took acted as a purgative.

Not having seen him during the early stages, I cannot give a more minute history of his complaint.

I gave the usual absorbents and the most effective opiates, without much alleviation of his sufferings, which were very great ; and although I administered the most sedative clysters, they produced little effect ; and large quantities of solid opium were required to give him temporary ease. He complained of a constant burning pain in the sacrum, to which part he always referred his greatest pain. In a few days death terminated his sufferings ; and the following appearances were found on dissection, which was performed in the presence of Captain Brown and Mr. Thom, assistant surgeon of the Forfar militia.

On opening the abdomen the fat forming the omentum was entirely absorbed. There was no effusion of serum in the cavity ; and all the bowels externally appeared in a healthy state. The liver was

not altered in structure, nor any of the contents of the chest. The mesenteric glands were enlarged and the lymphatic glands on the spine were considerably increased in size. The small intestines contained a great quantity of fetid air. On pushing the hand into the pelvis the rectum felt enlarged, and very hard and firm adhesions had taken place with the coats of the bladder, so as to form one uniform substance; but there was no appearance of increased vascular excitement. It was with great difficulty that the rectum could be separated from its firm attachment to the sacrum, the bones being very considerably involved in the disorganization.

After removing the anus and rectum, a bougie was passed per anum, and a longitudinal incision made through the diseased portion from its commencement to the anus. All vestige of coats was destroyed, and the whole had a uniform scirrhus cartilaginous appearance of about half an inch in thickness. The anus, and about two inches of the intestine, were sound, and the folds were as perfect as in health; at that distance from the anus there was a line of demarcation, the edges of the internal coat of the intestine were raised nearly half an inch, and so highly vascular as to have the appearance of the finest scarlet velvet. The cavity of the scirrhus part was about four inches in length, terminating by a contracted part bounded by another elevated portion of a dark purple colour. Where the scirrhus part terminated neither the upper nor the lower portion seemed to be in a state of ulceration, the intermediate cavity was considerably ulcerated and appeared as if worm eaten and flocculent, in some parts of an orange and in others of a dark green colour. Above the contracted part, the intestine was enlarged in volume and its coats much thickened, and the mucous membrane for more than a foot exhibited small ulcerated patches.*

This case differs from most on record as occurring at so early a period of life and exhibiting the true scirrhus structure, and as far as I could ascertain, never in its earlier stage being attended by that obstinate costiveness which has been described by several authors, who have written upon the scirrhus of the rectum,—also in not involving the lower portion of the rectum and anus; for Mr. Bott says “that in the cancer the entire rectum is disused, and on passing your finger per anum into it, you feel nothing but a kind of pulp, whereas in excrescence you may feel the rectum clear.”

While on the subject of the anus I may remark that I have lately been consulted frequently for an effusion of blood near the verge of the anus, which I think has been often confounded with enlarged or engorged veins. These small tumors, on being opened by the lancet, will expose a clot of blood very solid and much resembling a small ripe blackberry. Slight pressure is required to dislodge the coagulum. There is generally no discharge of blood from the incised part, and I have never seen hæmorrhage to any extent from pretty

* The dissection took place within twelve hours of death, and the drawing was made immediately—the beautiful scarlet colour had vanished within 24 hours.

free incisions near the anus. These tumors are very painful if left to themselves, and I am confident are the source of many of those painful enlargements near the verge of the anus, and might be prevented by a more free use of the lancet in their early stages.

The only dressing required, is a piece of dry lint introduced double between the nates, pressed close to the anus, and renewed three times a day. The lint is necessary to absorb the moisture, which is much increased by the irritation, and which if allowed to moisten the parts, prevents healing by the first intention, which I would particularly press upon the attention of the profession in all operations near the anus.

Postscript to Mr. H. Sandwith's Paper,—p. 265.

P. S. Since the above communication was sent to the press, the writer has noticed another on the same subject, in the sixteenth volume of the Medico-chirurgical Transactions, from the pen of Dr. James Alderson, of Hull. He has sincere pleasure in referring to the paper in question, as an important addition to our knowledge on the subject of hooping-cough, from the value of Dr. Alderson's cases and dissections, and also as a document highly favorable to the general conclusions advocated in these pages, both as to the nature and treatment of the disease.

The general result of Dr. Alderson's *post-obituary* inquiries may be thus stated. "In the lower and posterior portions of the lungs, the structure was rendered very firm and dense—the portions which were the subject of this change being exactly defined by the septa—of a dull red colour—devoid of air—sinking instantly in water—and thin slices undergoing no change by ablution. The individual lobules," he observes, "were more dense than in hepatized lungs, and the cellular membrane between them retained its natural structure, conveying to the touch the same sensation that is felt on handling the pancreas. The upper portions of lung were spongy and crepitant; but little air could be expelled from them by the bronchial tubes. Most of the smaller tubes were filled with a thick secretion—in one case with a false membrane—in all, the divisions of the tubes were somewhat dilated."*

In severe cases Dr. Alderson found leeches to be ineffectual, and advises the prompt and bold abstraction of blood by cupping.

* Medico-Chirurgical Review, No. xxvii., p. 144.

PART II.

NOTICES OF RECENT PUBLICATIONS.

I.—*Inquiries concerning the Intellectual Powers and the Investigation of Truth.* By JOHN ABERCROMBIE, M.D. Edinburgh: Waugh and Innes. 8vo. Pp. 435. 10s. 6d.

No class of philosophers has better opportunities of observing mental phenomena than the medical profession; and as might naturally be expected, there is no class by whom their study and classification has been more signally advanced. First and foremost amongst those illustrious names, associated with the cultivation of this department of science is the immortal Locke, himself a physician of no mean skill, who with the ardent prosecution of physiology and clinical medicine comprised the pursuit of the still more subtle inquiries relating to the manifestations of mind. Akenside and Gregory, and still more remarkably, Brown, have augmented the obligations under which metaphysical inquiries are placed in reference to our profession; and if we do not include the names of Hartley and Darwin, it is not because we undervalue the genius and productions of those remarkable men, but because we conceive that the value of their contributions to the purely inductive philosophy of mind, was slight in comparison with the evils resulting to the science from their materializing views, and their hypothetical statements.

We have before us an additional proof of the compatibility of the union of these two apparently opposite kinds of investigation in the pursuits of the same individuals.

As a sound pathological, and most accurate medical observer, the name of Abercrombie is already preeminent in the British school. We now meet with him in the character of expositor of *the functions of mind* both in their states of health and disease. We must confess, however, that our first feeling on finding Dr. Abercrombie on new ground, was a kind of regret that he should have allowed extra professional subjects to divert him from that class of investigations, in which he so remarkably excels; but on mature reflection we are willing to admit, that the objects of the work before us are sufficiently important to justify our author in his temporary excursion from the regions of medical science, the interests of which his production may perhaps subserve quite as fundamentally, as if it were a direct contribution to pathology or therapeutics.

Though chiefly relating to the powers of the mind, the practical application of those powers to the investigation of truth, and especially to that part of it which is involved in medical inquiries, is more prominently kept in view. The metaphysical views contained in the present work are essentially those of the late Dr. Brown, with which the more advanced student of mental philosophy will probably think our author has not blended much original matter. As a compendious

survey of intellectual science, divested of scholastic subtleties and mere barren technicalities ; and composed in a style of elegant simplicity and perspicuity, the work is truly admirable. Though avowedly written for the younger part of our fraternity, (to whom on entering their studies it will prove a most valuable present,) it may be read with advantage by its most accomplished professors ; and its principles, if faithfully and diligently pursued, would contribute to obviate the evils which in our recent remarks on Sydenham we deplored, arising from the prevalent imperfections of medical logic. Our limits will only allow us to enumerate some of the leading subjects of the book.

After some observations on the general topics of science, our author considers the nature, extent, and origin of our knowledge of mind and matter,—the intellectual operations, including memory, abstraction, imagination, judgment, the use of reason in the investigation of truth, and in correcting the impressions of the mind in regard to external things, under which department of this subject he includes the interesting phenomena of dreaming, somnambulism, insanity, and spectral illusions, and proceeds to apply “ the Rules of Philosophical investigation ” to medical science.

II.—*Outlines of Physiology, with an Appendix containing Heads of Lectures on Pathology and Therapeutics.* By WILLIAM PULTENEY ALISON, M. D. F. R. S. E. Fellow of the Royal College of Physicians, and Professor of the Institutes of Medicine, in the University of Edinburgh. Blackwood, Edinburgh ; Cadell, London. Pp. 452.

OUR limited space, and the great pressure of original communications, to which we principally devote the pages of this Journal, oblige us, though with great reluctance, to postpone a more minute analysis of this valuable work. The habits of Dr Alison's mind—his singular devotion to medical science—his fondness for abstract speculation, chastened by remarkable precision, and the most patient assiduity in clinical and pathological studies, and a dispassionate earnestness of character, united with subtle and vigorous mental powers, peculiarly qualify him to review the speculations and inquiries of past years, and, rejecting the doubtful or obscure, to ascertain the present state of physiological science. The whole work exhibits an admirable example of the results of the inductive philosophy. The author has analysed with severe fidelity, at every step, the processes by which the general principles of the science have been obtained, and the facts by which they are supported ; and the student will derive the greatest advantage by discovering the nature and the amount of evidence upon which each conclusion rests, and thus becoming practically acquainted with the method of inquiry leading to the most splendid results.

In a science, the evidence of which is often of so vague and illusory a character, a just jealousy must ever be entertained of hypothetical conclusions ; and the unsparing inquisition with which the author visits every speculation will also prove a useful example to the student. Nevertheless, he must ever be vigilant, lest, in rejecting unsubstantial hypotheses, which have supplied the place of truth in difficult and obscure inquiries, his scepticism be prematurely aroused to limit, within too narrow boundaries, the researches of the human mind, and to place that beyond the proper province of investigation which is only not yet discovered. A process thus sceptical is at the same time grossly hypothetical—it presumes our incapacity from our igno-

rance—and baffles, by erecting an imaginary barrier, the best conceived projects for the prosecution of researches.

The author has performed a most important service to physiological science, by endeavouring to systematize its principles, and combine them into one harmonious whole. This is the distinguishing feature of the work, and elevates its claims to attention exceedingly beyond the ordinary treatises on the same subject. We agree with the author in the opinion expressed in his preface, “that, in many of the medical writings of the present day, there is a want not so much of facts in physiology, as of principles by which these facts ought to be connected, and by which, the recollection and useful application of them may be best secured.” We know however no modern work which displays such minute, and so extended an acquaintance with the facts of physiological investigations.

We intend, in our succeeding number, to enter into a more minute analysis of the opinions exhibited in many parts of this interesting volume; and, in the mean time, recommend it to the attention of our readers. It contains an extended and dispassionate survey of the present state of Physiology. To the student it will prove an admirable guide to the sources of information, and will aid his mental processes in attaining the general principles of the science; and to the more advanced practitioner, it offers an excellent summary of modern discoveries and opinions.

III.—*The Effects of the principal Arts, Trades, and Professions—of Civic States, and Habits of Living,—on Health and Longevity: with a particular Reference to the Trades and Manufactures of Leeds, &c.*
By C. TURNER THACKRAH. London: Longman and Co. Pp. 126.

THE tendency of this work is useful. It will disseminate through many parts of the community a knowledge of those fertile sources of disease, the effects of which it is its chief object to display. “The object of this paper,” says the author, “is to excite the public attention to the subject.”* We believe that the work is well calculated to accomplish this design, and we doubt not that its publication will issue in attracting the attention of great capitalists, particularly in this part of the kingdom, to the state of our manufactures.

That portion of the work which contains the results of Mr. Thackrah’s original observations, relates chiefly to the manufactures of the West Riding of Yorkshire, and we regret that his design has necessarily rendered his remarks of so general and popular a nature, concerning subjects which are pregnant with such interesting professional results. We doubt not Mr. Thackrah will select from the numerous objects of inquiry, in the illustration of which he has displayed in this volume so much industry and acuteness, some *one* to which to devote his energies, and in the investigation of which he may confer on medical science permanent benefits.

Concerning the effects of those employments which produce dust, odour, and gaseous exhalations, the work contains many interesting details. The “workers in flax are subject to indigestion, morning vomiting, chronic inflammation of the bronchial membrane, inflammation of the lungs, and pulmonary consumption.” Mr. Thackrah gives in a note the results of six stethoscopic examinations of these artisans.† “The dust largely inhaled in respiration, irritates the air tube, produces at length organic disease of its membrane, or of the lungs themselves, and often excites the development of tubercles in constitutions predisposed to consumption.” “*Draw filing cast iron* is a very injurious occupation. The dust is much more abundant and the metallic particles much more minute,‡ than in the filing of *wrought iron*.” “The sensitive membrane lining the air tube and air cells is irritated by the particles of iron inhaled at every breath: chronic inflammation becomes established; the constitution is seriously injured by the quantity of mureo purulent matter which

is discharged, by the want of a full purification of the blood, and by the exhaustion which habitual cough produces : hectic fever and emaciation succeed. More certainly fatal is the case, where there exists in the constitution a predisposition to the tubercular form of the disease."

"The researches of the French pathologists, as well as our own observations, prove the cartilaginous bodies, called tubercles, to be very frequent in the human lungs, to be slow in assuming a destructive character, and often to remain crude or latent for an indefinite period. The subject of the present paper scarcely requires a detail of the progress of these bodies, as affected by external agents and internal excitement,—their augmentation, coalescence, change of hue, softening, the final purulent expectoration, by which successive masses are removed, and the effects produced on the lungs, the airtube and the constitution. Suffice it to urge, that a great proportion of our population is born with tubercles, or a disposition to the formation of these bodies ; that various agents in civil life tend powerfully to excite their development, and none more than irritation of the bronchial membrane."

We have not space to extend our extracts or remarks, but we hope that a work so useful in its tendency will not fail in its design. The subject is one of such great importance that we commend it to the attention of the profession.

IV.—*The Dublin Hospital Reports and Communications in Medicine and Surgery*, Volume the fifth. Dublin : Hodges and Smith, College Green.

V.—*The Glasgow Medical Journal*.

WE notice these works, regretting that our pages are occupied. They exhibit the most powerful evidence of the high attainments, and enlightened zeal of the profession in the cities whence they emanate. The Dublin Hospital Reports have long enjoyed the reputation of standard scientific productions, and the Glasgow Medical Journal, has the highest claims on the attention and patronage of the public. We hope in future to be able to give a lengthened analysis of provincial literature.

PART III.

PROVINCIAL MEDICAL INTELLIGENCE.

Wakefield Lunatic Asylum.—We have just received a copy of the last report of this important Institution, from which it appears, that in the course of the months of October, November, and December, there was a fresh irruption of dysentery, which had proved fatal in eight cases. In those months, at the close of summer, and in the early part of autumn, when this disease is usually the most prevalent, the patients were remarkably healthy. The fact is interesting, as it points for an explanation to the existence of some local noxious influence as the cause of these repeated epidemics. We regret to find that the Asylum is about to lose the efficient services of Dr. and Mrs. Ellis, under whose superintendence it has proceeded so satisfactorily from its commencement. The following is a statement of the admissions, &c. during the past year.

	Males.	Females.	
In the Asylum, 1st January, 1830,	134	121	255
Admitted since	58	55	113
	192	176	368
	Males.	Females.	Total.
Discharged.	31	43	74
Dead	28	19	47
Remaining in the Asylum, on the 31st Dec. 1831	133	114	247
Cases not exceeding three months' duration and first attack.	3		
Cases not exceeding 12 months' duration and first attack.	25		
Cases not exceeding two years' duration and first attack.	6		
Cases of more than two years' duration.	12		
Cases of those who have had previous attacks.		39	

Abstract of a Meteorological Register, kept at Ackworth School, for 1830, communicated by Luke Howard, Esq. F.R.S.

MONTH.	BAROMETER.		THER.		Rain in inches.	MEAN RESULT		WINDS.								
	Max.	Min.	Mx.	Mn.		Barom.	Therm.	Var.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
1 Jan.	30.63	29.00	44	11	0.71	29.98	32.00	15	2	4	0	0	0	2	3	5
2 Feb.	30.33	29.14	60	13	3.12	29.81	36.32	3	3	0	0	0	8	5	4	5
3 Mar.	30.53	29.29	74	25	0.42	29.97	46.24	6	0	0	0	2	0	14	8	1
4 April	30.16	28.88	74	21	3.44	29.64	48.50	2	0	1	0	0	6	15	6	0
5 May	30.19	29.25	68	33	3.75	29.80	51.10	12	2	2	0	2	1	8	1	3
6 June	30.12	29.36	75	39	4.88	29.74	55.00	7	0	0	0	1	1	13	3	5
7 July	30.34	29.24	82	43	4.37	29.84	61.55	8	0	0	0	0	1	18	3	1
8 Aug.	30.19	29.21	70	38	2.36	29.78	56.90	6	0	0	0	0	0	17	2	6
9 Sept.	30.19	29.14	66	39	3.79	29.65	53.68	8	0	0	0	0	3	16	1	2
10 Oct.	30.50	29.73	70	28	0.32	30.15	51.23	10	0	0	0	0	0	15	1	5
11 Nov.	30.39	28.98	61	26	2.21	29.72	43.88	13	0	0	0	1	3	13	0	0
12 Dec.	30.41	29.02	47	15	2.21	29.62	34.56	12	0	2	0	1	0	4	0	11

Mean Results of Wds. Var. 8.5—N. 0.58—N.E. 0.75—E. 0—S.E. 0.58—S. 1.9 S.W. 11.66—W. 2.25—N.W. 3.66.

Mean of Barometer for the year, 29.81 inches ; of Thermometer, 47.75.

Rain fallen, at the surface of the ground, 31.59 inches. Order of priority of the winds as to time of prevalence, (dividing the variable among the rest) S.W.—N.W. W.—S.—N.E.—S.E.—and N.—E. wanting.

By the remark above, "E. wanting," it is not to be understood that an East wind has at no time been observed to blow, but that it has been of so short continuance, as to give place in the day's observations to the *Variable* ; among which are also, doubtless, included many short observations of the other winds, here set down in low numbers.

The most remarkable features of this year are—1. The divided prevalence of Southerly and Westerly winds: with a total absence of the *East*, as a wind of prevalence through the day and night. 2. The rain, which is probably very near to the extreme quantity for the climate or locality. 3. A very high maximum temperature in the early part of the year ; the warm monthly maximum with which it commences having still advanced 16 degrees in the next month, and the *mean*, 10 degrees in the following one. This, with the occurrence of Southerly gales and rain at the Vernal Equinox, may be considered as having fairly indicated the wet character of the summer. Notwithstanding this abundance of rain, the family at the school has been healthy ; some nursing in the measles and whooping-cough excepted, all the cases of which terminated favourably. No floods of any *continuance* in the low grounds in the neighbourhood.

NOTES.—First mo. 6.—Thaw of the snow, part of which had fallen on the 17th ult. 14. Thawed again. 20. Snow in large quantity. Therm. at or below 32° in 27 days of the month : strong wind on 5 days : "downfall" of some kind on 15 days.

Second mo.—Snow every day to 6th, inclusive. Rapid thaw on 7th. Frequent showers 8th and 9th. From 10th to 19th mostly fair. 20th, 22d snowy. 23d rapid thaw. Mostly fair to 28th, then rain. Therm. at frost on 18 days.

Third mo.—Fair and frosty to 9th.; then a little rain, and mostly fair after to 15th. Strong wind on 10th and 13. Fair with little snow to 19th: then a smart shower of rain from South, and wet after for six days: after which, dry and fine to 31st. Therm. at Frost on 6 nights. Strong wind on 11 days.

Fourth mo.—Snowed 1st and 3d, and rained every day after to 25th, then fair to the end. No strong winds. Four nights frosty.

Fifth mo.—Rained on 19 days in the month. No strong winds. Therm. not below 32°. Thunderstorm very violent with great hail on 6th which did much damage.

Sixth mo.—Rain on 22 days. No frost. Strong wind on 9th and 13th. Thunder on 1, 25, 27th. On 25th vivid lightning, loud thunder, and heavy rain by night.

Seventh mo.—Rain on 21 days. Wet days the 2, 6, 11, 23, 30th. Strong winds 8, 9, 13, 14th. Thunderstorms on 2, 6, 30th. Eighth mo.—Rain on 21 days. Wet days 1, 9, 11, 17, 25, 27th. Strong winds twice. No thunder. Ninth mo.—Rain on 26 days. Strong wind 19th at night from South. Thunder with hail about noon 15th. Hailshower 16th. Thunder and lightning 21st. No frost. Tenth mo.—Very dry. Strong wind on 28th and 31st. Frost by night on 16, 26, 29th. Eleventh mo.—Rain, measured, in 7 days. Strong wind on 1, 2, 9, 20th. Many fine days, chiefly about the middle of the month. Frosty nights 6. Twelfth mo.—Snow or rain on 22 days: no strong winds. Frost on 4, 10, 11, 12, 13, 16th, thence to the end.

Examined and abstracted at Ackworth, 6th of 1st mo, 1831.

LUKE HOWARD.

THE
NORTH OF ENGLAND
MEDICAL AND SURGICAL JOURNAL.

MAY 1, 1831.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*A Sketch of the State of Medicine, and of Medical Schools and Institutions, in the United States of America, with some Statistical Observations.* By JAMES BLACK, M.D., Member of the Royal College of Physicians, London. Bolton.

(Continued from Page 313.)

BALTIMORE.

THE School of medicine in this city owes its origin to Dr. Davidge, who, in 1804 commenced a course of lectures on Midwifery, to a class of six students. In 1807, two eminent physicians, Dr. Cooke of Virginia, and Dr. Shaw of Maryland, united in the school, and lectures were given on the different branches of Medicine; and in the same year a charter was granted, and the school became regularly organized by the title of the "College of Medicine of Maryland." By the influence and zeal of its founder, and the co-operative labors of other eminent teachers, the school rose rapidly into importance, and has become one of the most respectable institutions in the country. It contains seven Professors' chairs—all well filled with men of much eminence and respectability. While the present Professor of Anatomy at the University of London held the Anatomical chair at this school, there was a considerable accession of Students—amounting at one time to 300, but

the number has fallen to about 150 since his retirement. At the commencement of this year 50 graduated; many of whom were destined for the western country, where they buy land, like other adventurers, and others returned to their estates in the south, for the purpose of confining their practice to the population employed on them. Since Mr. Pattison left Baltimore, the chair of Anatomy has been irregularly supplied; but during my stay in Baltimore, the Faculty confirmed a Dr. Wells, from New England, in the office—of whom a very high character is given as a demonstrator; and, as a lecturer, of being possessed of great fluency of delivery. The chair of Chemistry is filled by Dr. De Butts—a skilful analyst and mechanic, and who lately visited this country to purchase apparatus. Through the zeal and talents of these gentlemen, combined with those of Dr. Potter on the Theory and Practice, and the rest of the Professors, the faculty entertain great hopes of regaining their lost ground: though I am of opinion, that Philadelphia will long continue to be the Edinburgh in Transatlantic Medicine.

The College of Medicine, which is a plain but elegant building, surmounted by a dome, is situate in the retired outskirts of the town, and surrounded inside the outer walls by rich clover plots, rows of cherry trees, and a number of flowering shrubs—reminding one more of an Academic grove than a school of anatomy. The whole classes are shut from the end of February, which terminates the four months' course. The curriculum of study for the degree is the same as at New York. The Anatomical Theatre is well lighted by a full dome light, and may contain about six hundred pupils, and the dissecting rooms are convenient. There is little prejudice against dissection in this city—plenty of subjects being supplied by the resurrectionists at four dollars a piece, for which the students pay five.

The museum is neat, and contains some minerals, but few or any are native specimens, though the country is rich in this subject.*

The principal part of the anatomical preparations in the museum belonged to the collection of the late Mr. Allan Burns, and were brought to Baltimore by Mr. Pattison, from whom

* The Observatory Hill overlooking the harbour is formed of an immense heap of diluvial sand of the cleanest granular quality, to the depth of 30 to 40 feet, over which lies the curious phenomenon of a stratum of ferruginous shale rock, hard, and not decomposing by atmospheric exposure, and of the thickness of 6 inches. Over this rocky sheet, inclining to the south, lies a layer of red ochre, 3 to 4 inches in thickness; and superincumbent is a bed of clay and sandy loam, from 10 to 15 feet in depth.

they were purchased for a handsome sum by the College, when he left the country. Many additions have since been made,—among which I noticed a specimen of ossified pterygoid muscles on one side—the patient was long fed by spoon after the extraction of the front teeth. Dr. Potter related to me a case of premature ossification of the bones of the cranium and nearly all the arteries in an infant, which he knew and examined after death.

There is in the museum a very beautiful model, in wax, colored after life, by Dr. Gibson, now resident in Philadelphia. It is a case of ruptured uterus—the arm just projecting by the elbow through the rupture, and the uterus above, still continuing much distended by the body and fluids. The subject—model is entire, in full flesh—was taken soon after death, and is now placed in a large glass case in the middle of the room, forming a rare and interesting chef d'œuvre of this art. The galvanic apparatus is a wheel of three feet in diameter, and may contain about 200 pair of plates. All the chemical and philosophical instruments are imported from France, where they are purchased cheaper than in England; and they are subjected to no import duty in the States. The French instruments are certainly more splendid than ours, and perhaps more ingenious in their details; but I am given to understand they are not so correct, nor did I ever before think that the French could outdo our mechanics in the cheapness of such articles.

An Infirmary was built adjoining the College, a few years ago, to aid the School and afford clinical lectures to the students. The patients all pay for admission—having bed, board, and medical attendance, at so much per week; and they have no objection to be made the subject of illustrative lectures. They have few patients in the summer, not above 20, but in winter plenty. The wards were clean and comfortable, but not well constructed. The whole seems a joint stock concern of the Faculty engaged: though the school must proportionably profit by the opportunities of witnessing practical medicine.

The General Hospital is situate about a mile out of the city, on the road to Philadelphia, and on an open space of rising ground. It is an ample brick building, surrounded by shady trees, shrubs, and an extensive kitchen garden. It may contain about 400 beds, but last spring had only 16 patients, chiefly sailors, and 28 lunatics.*

* The Medical management is under a singular engagement—the medical gentleman having a vested right in his situation for ten years to come. He takes in

The Almshouse Hospital and Lying-in Hospital lie at some distance from the Town. They are the refuge of the poor, and, it was understood, were under excellent management.*

The general healthiness of Baltimore has been improving of late years, in common with that of the other towns in the States. The number of interments for the year ending 1st January last, from the returns at the Health Office is 1849 of whites, and 529 of the black population—the whole inhabitants being now computed above 80,000. The average deaths for the four preceding years is as 1 to 35.44 of the gross population; and the proportion of deaths from consumption to the whole mortality is 1 in 6.14.—Still-born 1 in 17.7—and fevers of all kinds as 1 in 11.56. During the same period of four years, the average number of deaths among the colored people to that among the whites is 1 to 3.64, and ten persons died whose ages were each above 100. From the returns, it appears, that almost half of the deaths, including still-born, among the whites, occurred under ten years of age. It also appears, that though the slaves form 42.3 per cent of the colored population, yet the deaths among them are but 23 per cent of the deaths among the same class—a fact, which, of itself is by no means favourable to the cause of the abolitionists.

WASHINGTON.

The medical department of the Columbia College, only requires any notice in this sketch, but as it is attached to the

sick boarders at five dollars per week; the lunatics are also at board; and the concern seemed to partake too much of the monopoly of trade. The walls and grounds belong to the State, and there is no medical supervision over the economy or practice. The Anatomical models in wax, colored after life, which are here exhibited, are very fine spectacles; and a few give a tolerably fair fac-simile of parts, especially the full length figure of the viscera and blood vessels. The representation of the wife of the artist, who was an Italian of the name of Chappi, is a mere show, and needlessly refined in giving only the pelvic viscera in dissected layers. The obstetrical figures, with all their relative parts, are too much *ad captandum*; and serve no purpose in the art, but to display the artist's knowledge of the external conformation. If wax could be made as limber and ductile when cold, as it serves to give the most natural representation of one view of human structure, it would be a valuable aid to anatomical science.

* Connected with the Arts and Sciences, there has lately been established an institution supported by subscription. The present rooms are in a large building, which is not half occupied, and is called the Athenæum, being built in more sanguine times than the present. The lecture rooms are convenient, the philosophical apparatus neat and respectable, and the establishment is very much promoted by great zeal and devotion on the part of the lecturers. There is a promising Museum of Mineralogy; and a goodly yet ghastly set of illustrative models and masques relating to craniology, which is but rearing its head in this place; and I could not help remarking on this and some other occasions, that amidst all this march of intellect among skulls, retorts, and mechanical apparatus, all classical, moral, and polite learning were apt to sink into forgetfulness and disrepute.

only College, whose charter is derived from the Congress of the United States, and which was granted in 1821. In 1824, the Medical School was organized, and in March, 1825, a course of lectures was commenced on the different branches of medicine; since which regular courses have been given by a faculty of six Professors. The number of matriculated students, were 30 last year. The fee for each professor 15 dollars—and the requisites for graduation are the same as in the other respectable institutions of the country. The professors of the medical department of the College last year very liberally came to a resolution of admitting, free of all class fees, one student from each of the States, and one from each Territory—to be selected by the senators and delegates of the States and Territories respectively—subject, however, to the payment of a matriculation fee of 5 dollars, and 20 for graduation, if the student qualifies.*

Washington is a very healthy situation—the mean range of the thermometrical extremes of the year being 55° —and the average number of deaths to that of the population, being as low as 1 in 53. This comparatively small extent of mortality arises from its being almost a new settlement, and daily receiving a fresh influx of inhabitants,—all residing in a very scattered manner, many of whom are not permanent residents, such as members of congress and of government, with their families and domestics. The number of deaths during last year were 304; of whom 1 in 10 only died of consumption, 1 in 19 were still-born, and 1 in 8.2 died of fever. The salubrity of the city and its site is, however, compensated by the unhealthiness of the finest parts of the neighbouring country, bordering on the Potomac, where the most picturesque and beautiful villas are beset with malaria in summer and autumn, giving rise to intermittent and remittent fevers, which renders them deserted in the finest season of the year.

BOSTON.

The Medical School at Boston, owes its origin in 1782 to the laudable and zealous exertions of Dr. John Warren, after several benefactions had been made by liberal individuals to Harvard College, during a few previous years, for the purpose of instituting lectures on some detached branches of

* Though the College is situated about one mile out of the city, in an elevated and rural situation, on the north western side of the gentle amphitheatre of hills which surround the capital; the Medical School is located in a suitable hall in the city; and on a small scale contains a fair convenience for the purposes intended. The college in all its departments and from its situation, offers a very eligible mode, by which the members of congress and government officers, may obtain the elements of education for their sons, and have frequent opportunities of remarking

Medicine. The School was duly organized during the above year by the appointment of professors, being the first seminary in New England, for teaching the Science of Medicine. In 1788, two degrees of the Doctorate were granted after considerable opposition, and lectures were continued to be given, in regular courses, at the University, situate about three miles from the city, till 1810; when, for the convenience of the Professors and Students, the Medical department was transferred to the city of Boston. The school has since continued to advance; and the legislature of Massachusetts granted funds in 1815 for the erection of a Medical College, near the Mall, which has every convenience that such an Institution requires. The Museum contains a valuable part of the late Dr. Frank Nicholls' injected Anatomical preparations, which were presented to the University by his son Dr. John Nicholls, of London. There are also in it several curious wax imitations of various parts of the human body, brought from Italy, by a Mr. Derby, of Salem. The Medical Libraries, belonging to the school, and to the Massachusetts Medical Society, deposited in the same building, are very respectable, and amount in all to upwards of 8000 vols. The Curriculum for the degree is a little more relaxed and somewhat different from those of the schools to the south. Two courses of lectures are required, but each of them does not much exceed three months. Two years' study under a regular practitioner are only required; but one year must elapse, before being admitted a candidate for the degree. An inaugural dissertation on some Medical subject in English is also required to be given in, and defended in the Philosophy Chamber at Cambridge. Dissection is not imperative, on the candidate; indeed, the public prejudice is here great against this practical part of education, and the Medical societies in New England make as many complaints on this score, as would fill a weekly column in the *Lancet*. The number of students last year were 60, 25 of whom graduated. This apparently small number, in such a populous place, is owing to so many rival establishments in the country, there being no less than 8 chartered schools granting degrees in New England; and the Professor of Anatomy told me, if it were not for the love of the science, he would consider the Professorship as not worth the holding.

their progress and conduct, at the same time that they are attending to their senatorial duties. I understand, however, that the college in its literary department has not fulfilled all the well-grounded hopes of its founders, and is not in a very thriving condition—the protégé of government, or what may be termed *King's College* having so many State *Universities* to contend with.

The Massachusetts General Hospital, founded in 1818, is situated on a very eligible spot, at the city end of Charleston Bridge, and close to the water, communicating with the beautiful and picturesque Bay of Boston. The outside of the building is of fine Quincy polished granite, having an elevated portico of the same in Ionic columns, with a corresponding entablature running round the whole. Between it and the water, is a well-stocked garden, neatly laid out, and hot and cold baths of fresh and salt water for the patients. The internal economy is superior to any thing I have ever seen as a refuge for the sick. Pay-patients are received at the rate of 3 to 5 dollars a week. Some of the rooms for this class, are tastefully and richly furnished, having fine mahogany bureaus, and bedsteads, mirrors, &c. There are also parlours and bedrooms in sets. The number of beds are 100. The patients last summer did not exceed 60 in all, the greater part of whom were poor, but appeared of a respectable personal character, especially the females, who spoke remarkably well, and had the air of good breeding. The nurses were all females, under 30 years of age; and, from their good looks and fresh complexions, good manners, and neat attire, had the appearance of the most respectable class of housemaids in England. The kitchen, laundry, and apparatus for heating the wards, were on the newer and scientific constructions, admitting of little improvement.*

Clinical lectures are given at the Hospital in the winter, free of all charge to the Medical students of the College. There is also an Insane Institution out of the town, under the same funds and incorporation as the Hospital; which has, besides the grant of land by the State, that was sold for its foundation and support, received above 300,000 dollars in private donations.

There is a Society in the State of Massachusetts, which was incorporated in 1781, for the protection of the regular practitioners and the public, against all quackery and unlicensed practice. It is very exclusively protected, and is invested with full powers and penalties against all offenders, forbidding also its members to consult with, or aid others not of the society. The advertising or selling any secret medicine or

* Dr. Warren, son of the founder of the Medical School, and Acting Surgeon of the Hospital, is in great and deserved repute in America, as a scientific operator; and from what I witnessed, during a walk through the Hospital, and at a consultation with his *confreres* on a very obscure tumor at the top of the Sternum, I should consider that nothing of flesh or blood would deter him from using the knife, if the least benefit could possibly accrue to the sufferer.

nostrum, is punished by expulsion; and no practitioner out of the society can recover any medical suit at law.

The population of Boston is upwards of 55,000, and the deaths during the year ending 1st January, 1830, as extracted from the returns at the Health office were 1221, of whom 1 in 19.1 were still-born; 1 in 6 died in consumption, and 1 in 9 of fevers. The most healthy months appear to be April and the four succeeding months, being different in the comparative monthly mortality from the towns to the south. The average rate of mortality to the population is calculated as 1 to 45, and the relative mortality in different ages corresponds with the observations made in other and old settled communities, that the relative excess of mortality among males above females, gradually decreases from birth up to 60, and between that to 70 years of age, when the deaths in each sex are nearly equal, after which the relative excess is on the side of the females, as 24 is to 13, there being more old females than males to die off.

The foregoing abbreviated account of the above noticed Institutions, with their statistical relations, contains the personal observation or knowledge of any importance, obtained on the subject of the Medical Schools in America; and the reader, who is desirous of being acquainted with the origin and early progress of the others enumerated in the tabular list at the beginning of this sketch, is referred to Dr. Thacker's "Medical Biography," a work to which I have been indebted for much of the early history of the schools already detailed. It also furnishes a very full account of the deceased Medical men, who have, during their lives, acquired any character or note in the United States.

MEDICAL LITERATURE.

The extent to which this article has already been carried, precludes at present any lengthened detail of the works that have issued from the pens of Medical authors in America. The paths of literature have not, however, been uncultivated by our Medical brethren in the west; and though their works are not generally known on this side of the water; they are yet voluminous on many subjects of practical Medicine, and display a very laudable research and enquiry. The works of Rush deservedly stand the first in the catalogue, being as well known in England, as in America; and in succession may be ranked the productions of Drs. Barton, Hosack, and Mitchell. The "Anatomy" of Dr. Wistar, of Philadelphia, has a great character in the States, and also Dorsey's "Elements of Surgery," to which may be added the works of Physick, Mease,

Caine, and Chapman, of Philadelphia; not to forget the more modern Treatises of Dewees, of the same city, on Female Complaints; that of Beck, of New York, on *Materia Medica* and Medical Jurisprudence; and those of the late Dr. Godman, on Natural History, and some Medical subjects. The leading authorities in Surgery, are Physick and Dorsey, of Philadelphia; Post and Mott, in New York; and Dr. J. C. Warren, of Boston. Cullen's "Lines," and Dr. Gregory's "Practice of Medicine," are the text books generally used by students; the "System" of Good, being a scarcer work, and I do not think it is re-printed in the States. The best and more leading works in England are all re-printed and sold at a somewhat cheaper rate than their market price in this country; and the American Medical editors put them under a slight trimming and annotation, in many instances, to fit them better for the market in the States. The re-prints form a great part of Medical libraries; the native works sell higher, and are principally confined to subjects of practical Medicine. The tone of Medical literature savours little of theoretical reasoning, deep experimental research, or historical disquisition; and indeed works of this description, however talented, or laboriously prepared, would not repay the author, or be much read. Practical utility and economy are the great themes of authorship; and the labors of the Medical press even bear the impression of the mechanical and utilitarian stamp of the age, in a greater degree than that to which the productions of our country have as yet, on the whole, arrived.

A General or National Pharmacopeia for the whole United States is now under consideration. Medical delegates from all the States and Medical societies and colleges having met last spring at Washington, for the purpose of selecting and revising a general *Materia Medica* and formulæ, as a codex for all practitioners within the union. This will be a very important aid to Medical utility in the States, and will be a kind of federative compact among the Medical Sections, similar to the Act of Constitution among the Political States.

The Periodical Medical Literature of the Country, in the number and segregated character of its publications, bears some analogy to the dispersed and independent nature of the numerous schools of Medicine. While not above five Medical Journals have been published in Great Britain and Ireland, till within these last four years, there have been upwards of fifteen in the course of publication in the United States, previous to 1827. Some of these have since passed through a violent or a euthanasial death, while others have arisen from their ashes, or started with pristine fires from the press.

The following works of this nature, are at present, or were lately in the course of publication, to which the seat of publication and the years in which they commenced are attached.

The New York Medical Repository	at New York	in 1797
*The New York Medical and Physical Journal	ditto	„ 1822
The New York Monthly Chronicle of Medicine and Surgery	ditto	„ 1824
The New York Medical Enquirer (Monthly)	ditto	„ 1830
The Philadelphia Medical and Physical Journal	Philadelphia	„ 1804
The American Medical Recorder	ditto	„ 1818
The Medical Review and Analectic Journal.	ditto	„ 1824
The North American Medical and Surgical Journal.	ditto	„ 1826
The Philadelphia Monthly Journal of Medicine and Surgery	ditto	„ 1827
*The American Journal of the Medical Sciences	ditto	„ 1827
The Baltimore Medical and Physical Recorder	Baltimore	„ 1808
The Baltimore Medical and Philosophical Ly- ceum.	ditto	„ 1811
*The New England Journal of Medicine and Surgery	Boston	„ 1812
The Boston Medical Intelligencer.	ditto	„ 1823
The Western Medical Reporter	Cincinnati, Ohio	„ 1822
The Hartford Analectic Journal of Medicine and Surgery	Hartford	„ 1823
The Carolina Journal of Medicine, &c.	Charleston	„ 1825
*The American Journal of Science and Arts	Newhaven	„ 1821

Those marked with an asterisk are the more eminent, appear of a higher character, and are more known on this side the Atlantic.

CONCLUSION.

From the preceding Sketch, it will be seen, that the wide boundaries of the United States are plentifully supplied with medical schools and all auxiliary appliances; and though none of them affect to afford the high scale of education, which the Universities and the higher schools in this country do, still enough may be learned and acquired at the majority of them, to qualify the young practitioner for entering on his profession, with credit to himself and much usefulness to the public, —and eventually of leading him, with due study and care, to the highest eminence, as a physician or surgeon. Many of the leading physicians and surgeons in the States have no other academical honor, but the doctorate of their own schools. The ambition or necessity of being possessed of a degree from this country or the continent, has very much diminished of late years. This is partly owing to the growing opinion, which

the Americans have of the independent importance of their own country—their latent prejudices, not altogether unnatural, against being in any way beholden to the mother country, and the increasing respect which is paid to degrees granted among themselves.

However well adapted such a diffused, cheap, and short course of medical education may be to the wants of a young and widely extended country; it must, however, be seen, that it is not fitted, in the ordinary course of human intellect, to lay the broad foundations of those elements of professional learning, on which an extensive and refined superstructure will be reared. Compared with the course of education now required for candidates at Apothecaries' Hall, the formal course of study for the Doctorate in the United States exhibits a slenderer extent of qualifications—without adding to the Apothecary's superior course of study the *longus labor inanis*que of the apprenticeship of five years, and the requisite attendance on Hospital practice, the former of which is not the initiatory custom in America, and the latter is not imperative. The facilities which are hereby afforded for entering on the honors and privileges of the profession in the States, have encouraged of late years many young men of slender education to become doctors—among whom the adventurers to the West, and the sons of rich parents, whose divided estates the laws against primogeniture have afforded their children enough to make them disdain a small trade or any mechanical employment, without being sufficient for their entire support, form a great number of the whole. This open and facile state of the portals of the profession is frequently lamented by many of the Teachers themselves; and they behold with regret, the rush of aspirants to their class rooms, provided in general with little intellectual recommendation but a common education without classical acquirements, a quick perception, and an ardent ambition to pass on with the armour of a degree, and embark in the great contest for food, raiment, dollars, and land.

Instead of a growing disposition in favour of classical education, as the country has advanced in wealth and refinement, there is rather an increased prejudice against it, not only among the mechanical classes, who look with the greatest jealousy on the sons of rich people receiving a higher degree of education than the common or State Schools afford, but also among many of the better educated, and people of property themselves; who pretend to see the inutility of such monastic acquirements, either to make their sons serviceable to the State, influential among the people, or to advance their pecuniary interest in any employment. The heads of the different colleges

have, therefore, occasional difficulties in stemming the tide of this utilitarian prejudice, and short as are the terms of a literary degree at many of the seminaries, they have at times been publicly called upon to throw their gates still more open, and cut shorter their terms, that the youths of promise may figure away in the world, before the years of their minority are accomplished. The Trustees of Yale College, one of the most eminent seminaries, and an honour to the country, have lately made a laudable and truly patriotic stand against this inroad of mechanism; and the North American Review has also ably advocated the cause of learning and academical discipline at several stages of its respected career. The terms and course of education at many of the Colleges of the States are well adapted to lay the ground-work of classical and scientific attainments of the higher order, and if followed up by a more protracted term of study, are every way competent to crown their graduates with every requisite qualification for entering any profession, or embarking in the fields of scholarship. From such Colleges as those of Yale and Havard have issued young men of great literary acquirements; and those of them who have subsequently embarked in the professions, have reached an eminence, which their less educated competitors neither have, nor could ever have attained. It is the public and ambient pressure on the pale of College discipline, which is threatening to break down the sanctuaries of learning, which is the subject of regret, both to Professors and to all who love to adorn their country as much by the labors of intellect as by mere wealth. The active energies of the young population, so full of promise in most that relates to the economy of the State and society are likely to prove, like the precocious activity of some of the bodily functions, but stimulants to the premature and unfruitful development of ambition and enterprise; which as naturally lead to wild speculation or despondency, as the excited stomachs of children to early dyspepsia and valetudinarianism.

Finally adverting to the short course of medical education in the States, it is presumed, that the medical faculties, having seen how the scale of education in this country and in France is becoming more and more elevated and extended, and that the curriculum for the degree of M.D. among them, will not admit now of comparison with that for the Apothecary's licence, and still less with those required for the diploma and degree at our Colleges and Universities, they will also see the necessity, as a matter of justice to their graduates, and of respect to their schools, either to extend their terms of lectures and of study, or else institute a higher class of medical graduates, who may have undergone a longer course of study and a severer scrutiny.

To the first of these modes some difficulty presents itself; for in order to render the alteration efficient and complete, the whole schools throughout the Union must concur in the extended system of study; as it may be considered quite certain, that wherever a limited course for the degree remains, thither will the spirit of adventure and frugality carry the American students. As to the second scheme, the republican spirit of society will present prejudices and objections to different ranks being in the profession, which would outcry any arguments or apology that might be made for the innovation. Time, however, assisted by the influx and diffusion of wealth, may bring about some more favourable state of thinking in this respect. The way, perhaps, to evade some of the prejudices on this important subject, would be for Government to appoint a General Faculty or College, chosen out of all the principal Schools of Medicine, before whom a higher class of graduates may be examined, after a prescribed course of longer study and attendance on lectures than is now required, and be honored with the title of a Doctor in Medicine of the United States, the initials of which qualification might be M.D. U. S. This higher scale of academical acquirements and study would place the graduates so honored on a level with those who have received degrees in this country or on the Continent, and so promote that mutual respect and deference which should exist among all educated members of a liberal profession throughout both hemispheres of the world.

Bolton, November 1st. 1830.

ART II.—*A Case of Pulmonary Encephaloid, continuous with a Tumor in the Neck, with Observations.* By JOHN ADDINGTON SYMONDS, M.D. (Edin.) Oxford.

THE subject of this disease was Luke Stevens, aged 32, of tall stature, and dark complexion, and who hitherto had enjoyed a very fair proportion of health. His occupation was that of superintending chimney sweeping. I was called to him on the 26th of last September, when I found him complaining of cough, uneasiness in the chest not amounting to pain, some oppression of breathing, loss of appetite, and slight thirst; the accession of which symptoms he attributed to a recent exposure to cold. His pulse was 90, and somewhat sharp, skin a little above the usual temperature, but moist, and the bowels tolerably regular. His face was slightly swollen on the right side, up to the orbit and temple; the eyes prominent,

and suffused with a dirty yellowish tint. He stated that he had not felt indisposed more than two or three days previously, but that he had been under the surgical care of Mr. Hitchings for several weeks, in consequence of a swelling in the neck. On examination I found the tumor to be situated half an inch above the right clavicle; firm, very immoveable, of rather unequal surface, its size about that of a small pullet's egg, and its base indefinite. Notwithstanding leeches and a variety of other applications had been employed, it had been gradually increasing. The Patient was at that time using Ung. Hyd. Camph. He would not admit that the tumor gave him any pain, either spontaneously or when handled, but complained that he was often troubled with a sensation of choking or suffocation, especially when in a recumbent posture, or when leaning forwards, and which he assigned to pressure of the tumor on the windpipe. He had experienced this feeling before he was aware of the presence of the tumor. This he first discovered whilst shaving before a looking-glass. His wife mentioned that his face was always more bloated after lying down.

He was bled to $\frac{3}{4}$ xiv, with relief. A blister was applied to the sternum. Tartar emetic and blue pill in repeated doses were ordered with saline mixture, and the continuance of the application of the ointment recommended.

On the next day my report states that the blister had risen well, that he felt better, his breathing easier, cough less troublesome, and the tightness removed from the chest. Pulse scarcely above the natural standard. In the course of two or three days the above symptoms had disappeared, though debility continued, and the general aspect was unhealthy. The tumor in statu quo; at this time it was regarded as an accidental accompaniment of the pectoral complaints, rather than as having any concern in their causation.

My next report was on the 23rd of November. During this interval it so happened that I had seen him only once or twice, but my father had visited him repeatedly, and during a part of the time with my distinguished friend Dr. Kidd. I was informed that in a few days after the last report the former symptoms returned. They consisted of dyspnœa, not much affected by posture, for he could lie indifferently on the back or on either side, though from habit he seemed to prefer the left,—of cough with trifling expectoration, and that of a thin frothy character,—of feverishness, the pulse never attaining very great frequency, but irritable,—and of general constitutional derangement. They continued with various abatements and exacerbations till about the 20th of November, when there appeared a considerable improvement both in the affection of

the respiratory organs, and in the general health,—the cough was gone, the breathing unembarrassed, the pulse reduced, the appetite restored, and debility alone complained of. The principal remedies employed had been squills, tartar emetic, camphor, myrrh, hyosciamus, acetic acid, and occasional emetics. Latterly, on the remission of the cough, and the subsidence of vascular excitement, quinine had been exhibited with apparent advantage. Blisters, and a plaster, composed of ant. tart. and pix burg. had afforded great relief. But during this period the tumor had continued to increase; in vain had iodine been assiduously applied externally, (its internal administration the constitutional symptoms prevented,) while fomentations and poultices were equally unsuccessful in effecting the slightest alteration.

On the 28th, my report is that the dyspnœa and cough had returned. No pain in the chest, even during forcible inspiration. Tongue furred in the centre, and rough: skin moist; face bloated; emaciation very evident; urine turbid, and high coloured; pulse 96—small. On application of the stethoscope I found the respiratory murmur very clear on the left side, but inaudible on the superior part of the right; on which part also the sound of percussion was very dull. The sound of the heart was heard distinctly under the right clavicle, though not under the left. The tumor was so much increased in bulk, as not to be embraced by the hand; firm to the touch, more projecting than before, but still undefined in its base; so immoveable as to give the impression that it had some osseous connection, and as completely free from pain as before. The integuments above it differed neither in appearance nor feel, from those of the neighbouring parts, excepting that as might have been expected, they were somewhat on the stretch; the external jugular was seen of its usual bulk passing over the tumor. Ordered pills of ant. tart. pil. hyd., and squills with nitre drink.

November 30th.—Cough and breathing somewhat relieved; less feverishness; complains much of debility. Rep. pil. Bibat mist. ac. nitr. dil.

As nothing of particular interest occurs in the intermediate reports, I shall proceed to Dec. 8th. Complains sadly of want of sleep from disturbance of cough and dyspnœa. Expectoration of thin glairy mucus. Face and lower extremities somewhat anasarcaous; voice hoarse; tumor has fallen a little in the upper part. R Hyd. sub. gr. iij Pulv. scill—Opii aa gr. ij.

Misce et div. in pil. ij vesp. sumend.

Sumat mane potass. supertart. ℥ss. Fiat fontic. super tumorem.

9th.—Had a better night; the cough and breathing are rather easier.

R Hyd. sub. gr. iij p. opii gr. ij p. scill. gr. iij. Misce et div. in pil. ij vesp. sumend.

Rep. pot. supert.

15th.—Has taken the same pills every night with decided relief. Gums not at all affected by the mercury; swelling of face and legs subsided; tongue harsh, dry, and variegated; face sallow; eyes torpid and muddy; issue goes on well; pulse small and frequent. Ordered pills of ipecacuanha, squills, and hyosciamus, with mixture of diluted nitric acid.

20th.—Has continued to feel somewhat better till within the last two or three days. To day the respiration is very laborious, and the cough frequent. No pain; expectoration thin; has had occasional rigors; his spirits are good, and he fancies he has only caught a fresh cold. Pulse 104, full, but compressible; no appreciable alteration in the tumor. Ordered a blister to the sternum. Pills of tartar emetic with saline mixture.

21st—Symptoms much the same; slight rigors now and then; pulse more feeble.

23rd.—Respiration exceedingly embarrassed; inability to cough, from weakness; pulse intermitting; loud gurgling sound at the lower part of the right side; mucous rattle on the left.

Died on the evening of the 24th.

The body was examined thirty six hours after death. As it was very desirable to have a clear view of the connection which might exist between the tumor in the neck, and the disease in the thorax, I sawed through the right clavicle, near its scapular extremity, and divided the ribs on that side at about two inches distance from their cartilages. At first, when the parts were exposed, it seemed from the want of collapse, and the actual resistance to the hand, that the tumor had extended into the thorax, and occasioned by its pressure a condensation of the pulmonary tissue; but, on more careful examination, it was found to be continuous with the upper lobe of the lung, which was now, with the exception of a small portion posteriorly, converted into the same substance as that of the tumor. The general figure of the morbid structure was irregular, and the surface slightly unequal, but not sufficiently so to be lobulated. Its consistence was for the most part that of a brain which has been steeped in diluted nitric acid: but at the superior edge in the neck it approached more to a pulpy character, and the same appearance was noticed in one or two points at its margin in the chest. On cutting it, I observed what Laennec mentions,—that the scalpel, though seeming to cut

through fatty substance, bears no stain of grease. A longitudinal section presented on the whole a very uniform aspect; the color milk-white, but interspersed with irregular streaks of a darker hue, having very much the character of pale cineritious matter mixed up with medullary—the whole at a moment's glance bringing to mind the appearance of cerebral tissue. Here and there, particularly near the circumference, waving striæ of a pale rose color, and dipping down into the substance, might be perceived. The body of the cervical portion, and the mass in the chest bore the closest resemblance to each other, but the intervening part was of a more prevailing white aspect. A thin reddish covering was dissected off anteriorly, but no distinct cysts or cyst could be detected; perhaps the colored streaks might have indicated membranous divisions. No definite line of demarcation from the surrounding pulmonary tissue could be distinguished; the one being insensibly lost in the other,—shading off from the cerebriform appearance, through the intermediate degrees of greyness, into the dirty greenish aspect of the brittle uncrepitating substance into which even that which might still be called the parenchymatous texture of the lung, had degenerated.*

The extent of the diseased mass was as follows.—The space occupied in the neck was bounded posteriorly by the trapezius, superiorly by a line drawn on a level with the larynx, and anteriorly by the trachea. After tracing the disease as it extended downwards along this part, the œsophagus, and the sheath of the carotid, till within half an inch of the innominata, it was found to envelope about that extent of the right carotid, and subclavian, to pass behind the œsophagus, and to implicate in a similar manner the commencement of the left carotid and subclavian, and then pursuing its course along the descending part of the arch, to surround completely the right bronchus, and finally to diffuse itself through the superior lobe of the right lung.†

On separating with my hand the inferior lobe from its fibrous attachments, and on drawing it upwards from the diaphragm, my fingers broke into a cavity from which issued a large quantity of very thick darkish-colored pus, measuring at least three pints. Careful inspection proved it to be an abscess confined to the parenchyma, though the parietes ante-

* In the midst of this part there were observed two or three globular masses of fatty matter about the size of a nut.

† It is perhaps worthy of notice that the coats of the arteries which passed through the tumor appeared to have escaped without any alteration of their usual physical qualities.

riorly and inferiorly were thin. No lining membrane could be seen; on the contrary, the walls had a ragged surface, evidently consisting of the disorganized corroded tissue. The bronchi in the vicinity were not found to contain any pus, and no ramifications were traced into the abscess of sufficient caliber to admit a fluid of such consistence, as that of the pus which the abscess had contained.

The left pleural cavity contained a small quantity of serum, and there were a few slight adhesions. The pulmonary substance was tolerably healthy, with the exception of a little engorgement in the inferior portions. The mucous secretion was abundant both in the large and small bronchi.

The pericardium contained rather more than its usual quantity of fluid. The heart was præternaturally small, the parietes not thin in proportion to the cavities, and the valves perfect. It had the appearance described by Laennec,* as common in cachectic diseases.

The friends of the deceased would not allow us to examine the other cavities.

Observations.

Although aware that medullary tumor in the lungs is by no means rare, I have thought it worth while to present the above case to the public, both because some of its features are new, and because very few individual cases of the kind have to my knowledge been recorded in our language. Mr. Hey does not mention that this organ is subject to fungus hæmatodes. Mr. Wardrop, in his work on this disease, affirms that he has not observed it in the lungs, but thinks that Baillie has described it though not under the present name; the reader will remember the soft pulpy tubercle of the latter author, which in many points corresponds with one of the forms in which encephaloid occurs in the pulmonary tissue.

M. Bayle in his treatise on phthisis has detailed three cases of cancerous phthisis, which Laennec points out as specimens of encephaloid; one of them was furnished by the latter, and indeed was the first ever published in France.† This pathologist has given with his usual minuteness of graphic power, a very full account of the anatomical characters of this peculiar

* "It may be remarked as generally true, that the hearts of individuals who have died of diseases productive of great emaciation, such as cancer and chronic phthisis, are commonly small; and in examining such cases, I have thought that I could recognize a sort of withering of the organ indicative of its loss of volume."

—See Forbes's Laennec,—Chapter on Atrophy of the Heart.

† Dictionnaire des Sciences Medicales.

degeneration, but has not illustrated it by cases. His subdivisions are 1. Encysted. 2. Unencysted. 3. Infiltrated.

Lobstein* has an excellent chapter on medullary fungus, wherein he relates a striking example of its attacking the substance of the lungs. “*Les poumons séparés du cœur pesaient neuf livres. Toute leur surface était parsemée de tubercules encephaloides dont la volume variait depuis la grosseur d’un pois jusqu’à celle d’un œuf.*” Amongst Mr. Langstaff’s† cases of fungus hæmatodes, there is one in which the lungs were implicated together with several other organs. Doubtless numerous cases of the same kind must have fallen under the notice of those who have dissected bodies that had been affected with the disease in the extremities, since it seldom occurs in one part without also involving several others.

I should not omit to mention two interesting and well-described cases reported in the *Periscope of the Medico-Chirurgical Review*.‡ They occurred at St. George’s Hospital. I see also in Dr. Hodgkin’s very scientific catalogue of the museum at Guy’s Hospital, a notice of a large encephaloid tumor in the lung of a child that died of empyema.

I have called the case which I have related above a specimen of encephaloid, because the name is exactly appropriate to the appearance of the parts and more so than fungus hæmatodes, (a term that in all cases of the disease applies best to the last stage) for there was no extravasation of blood, and indeed no extraordinary vascularity of the covering. But, as the reader must have noticed, the progress of the disease was not such as is usual in encephaloid; considering its extent there was very little softening in any part, and the degree of resistance to the touch in the cervical portion during life, was far from suggesting that its nature might be medullary sarcoma, although the state of the health was such as to indicate malignant affection of some kind. Its consistence perhaps approached somewhat nearer to scirrhus, but it was sufficiently distinguished from the latter, by the absence of the radiated texture, the equable integuments, the freedom from pain, and I may add by the extreme rarity of this kind of disorganization in the lungs.§ Unless we allow it then to have been *sui generis*, I am not acquainted with any form of morbid growth to which

* *Traité d’Anatomie Pathologique.* Tome premier, p. 419.

† *Med. Chir. Trans.* Vol. viii., Part I.

‡ Number xxvi.

§ Laennec asserts that he never witnessed Scirrhus in the Lungs. Dr. James Johnson, in the *Journal* before alluded to, appends to the two encephaloid cases one which he pronounces to be of a true scirrhus character.

it was more allied than encephaloid in its first stage. It is not surprising that structures deviating so much from the natural interstitial secretion should be irregular in their very deviations.

During life the stethoscope indicated condensation of the lung, but of course it afforded no clue to the nature of the consolidation.

The temporary amendment and almost cessation of the symptoms was very remarkable, but similar occurrences must have been observed by all who have had experience in organic diseases. Thus the heart will struggle for years with hypertrophy, or valvular ossification, the lungs play beneath the incumbrance of tubercles, the brain feel and think while exostoses are shooting deeper and deeper into its delicate organization, and the individual will still enjoy many intervals of comparative ease and enjoyment. The system becomes accustomed after a while to the presence of the new morbid depositions as to that of extraneously introduced substances, or more strictly speaking becomes insensible to their irritation, until some existing cause, such as cold, disturbance of the circulation, irregularity of diet, or the very increase of the morbid product, recalls the former derangements both local and general.

ART. III.—*Account of the General Hospital in Hamburg.*

By THOMAS STEWART TRAILL, M.D., F.R.S. E., Physician to the Liverpool Infirmary, &c., &c. &c.

WHILE assisting at the great annual meeting of the German "Naturalists and Physicians" held in last September at Hamburg, I had opportunities of examining the noble General Hospital of that city; and was greatly struck with its vast size, the excellence of its administration, and the order of its medical establishments. Presuming that a short account of this Hospital may not be uninteresting to the English reader, I have thrown the notes, taken on the spot, into the present form.

I.—GENERAL DESCRIPTION.

The *new* general Hospital is the successor of one destroyed by the French in 1814 when they fortified Hamburg. From its confined site, close to the banks of the Alster, and the alledged propriety of its designation, *Pesthof*, the old hospital had apparently little claim to the regret of the citizens.

When Hamburg recovered her independence, the magistrates turned their attention to the choice of a better site, and

the erection of a convenient building for the purposes of an hospital. The present noble institution, which was opened in January, 1823, was the result of their deliberations.

This hospital is built at the extremity of the suburb of St. George, an outwork on the south east side of the city, defended by a wide and deep ditch filled with running water, and cut off from the town by another that discharges the surplus waters of the wide expanse of the Alster into the Haven. The site is dry and airy; for the soil is a mixture of sand and loam, and the open space round the building is considerable. There is an inexhaustible supply of sweet water in the neighbourhood: and on either hand is a garden belonging to the hospital, which has behind it a spacious court-yard.

The form of the building is a parallelogram, with one side open. The length of the front is upwards of 700 feet, and of the wings 330 feet each, while the general breadth is 56 feet; but the depth of the *Corps de Logis* and of four pavilions, at the corners, is somewhat more. The whole building has a vaulted basement and attics. There are, besides, three stories in the *Corp de Logis*; but only two in other parts of the house. The walls are substantially built of the thickness of $2\frac{1}{2}$ feet. They are faced externally with a yellowish *Conglomerate*, found on the heathy plains in the neighbourhood; the casing of the windows and doors is of hewn freestone; the rest of the structure is of brick. The roof is covered with flat tiles of a bluish color; and the ridge is secured by sheet copper—the material usually employed for such purposes in this part of Germany.

In every part of the building attention has chiefly been directed to convenience and utility; nothing has been sacrificed to mere ornament; yet its erection cost the large sum of 1,281,901 *Marc*s, or £85,460 sterling.

The vaulted basement is applied to various purposes of the establishment: the attics are chiefly employed as lumber rooms; the *corps de logis* is appropriated to the general administration of the house.

This hospital is intended not only for the relief of the indigent, but also for the reception of persons who can afford to pay a moderate board, but may be unable to command at home the accommodation and attention required in sickness. This part of the establishment has been found so beneficial, that patients come from considerable distances to avail themselves of the advantages it holds out, and of the medical talent of the eminent men who are now connected with the hospital. Such patients are accommodated, some in wards, others in private rooms; and these apartments had an

air of comfort and neatness rarely witnessed in the dwellings of persons in the same ranks of society.* Their diet is superior to the allowances of the gratuitous patients, and they are permitted, under the sanction of their medical attendant, to purchase such additional luxuries at shops established *within* the hospital, as they might consider desirable. The general hospital diet is sufficient, and of excellent quality; and due attention seemed to be paid to the wants and necessities of the poorest patient.

THE WARDS.

The wards, or saloons, and other rooms for the reception of patients, in this Hospital amount to 200, capable of containing 1400 beds; of which more than 1300 were occupied at the period of my visit. These saloons are on the first and second floors of the building, and range along the exterior walls, in a single row. They all open directly into spacious corridors running the whole length of the Hospital, along the inner walls of the quadrangle. These corridors are airy, and well lighted, 10 feet wide, and 13 feet high. By this arrangement of open corridors on one side, and wards opening into them on the other, a free current of air may at any moment be established through the wards. The corridors likewise form commodious places for exercise in bad weather, especially for weak convalescents.

The saloons are of two sizes. The largest are nearly squares of 49 by 47 feet; the smaller oblongs of $40\frac{1}{2}$ by 24 feet. The former are intended to contain 30 beds; the latter were calculated to hold 12 beds; and, as all the wards are 13 feet high, at that rate, each patient in the wards would have about 1000 cubic feet of air. At the period of my visit, however, the large wards in many instances contained 32 beds; and I counted 16 in some of the smaller; and, though the rooms certainly appeared crowded, yet the air of the wards was sweet, and every thing appeared clean. This crowded state of the Hospital is deprecated by the medical officers: but such is their reputation, and the popularity of the establishment, that the applications for admission are annually increasing. Should this continue, it will become necessary to relieve the establishment by removing the incurables, the maniacs and children (who, at present, are all admitted under this roof) to other Hospitals; a separation particularly desir-

* The individuals so admitted pay generally about three marcs or four shillings a week; but those who enjoy a private room and better diet are charged from three to six marcs.

able, especially as regards the insane, who are now contained in that part of the house adjoining the two posterior pavilions, in apartments not so commodious as could be wished.

The ventilation of the Hospital is very simple, yet effectual. The free air of the corridors communicates through the doors, with the wards; and both galleries and wards are furnished with swing windows. In cold weather, the external air is admitted by sliders near the floor, and the vitiated air escapes into the corridors, by valves placed over each door.

There are two small chambers connected with each ward; one of which is the private room of the nurses; the other a water closet, on a simple and excellent construction. Earthenware pots are fixed in the seat; and these are provided with copper pans, moveable on a hinge: by means of a cord attached to a lever connected with the pan, and passing over a pully to the door of the privy, the opening of the door discharges the contents of the pan, and at the same time turns a stream of water from a cistern into the pot. When the door shuts, which is effected by a suspended weight, the copper pan, returning to cover the orifice of the pot, catches some of the running water; and thus forms a water valve, by which every offensive smell is obviated. This contrivance, however, wastes water, (a circumstance here of little consequence): for the jet takes place both when a person enters and when he leaves the water closet. The ordure is conveyed from the privies through an iron pipe, to a large sewer which discharges itself into the "Rampart-Foss;" through which a constant stream flows from the Alster.

The floors of the wards and corridors, are all painted of a reddish brown color, with a thin oil paint, which sinks into the pores of the wood, and takes a sort of polish when rubbed. This plan has several advantages over our floors of naked deal, which imbibe every stain, and require much water, and hard scouring, to restore their color, while they remain so long wet as to be occasionally prejudicial to the patients.

The floors of the Hamburg Hospital on the contrary saturated with oil paint, are only superficially stained by any sordes, are speedily cleansed by a wet rag, and dry almost immediately. Hence, the floors of all the wards and corridors are regularly wet-mopped daily; and I never witnessed greater attention to cleanliness in any Hospital.

The wards in cold weather are heated by neat stoves, covered with white Dutch tiles. There are two stoves in each of the large, and one in the smaller wards. These are placed in the middle of the rooms, and have a neat appearance. The fuel, an article very dear in Hamburg, consists of turf and wood.

The use of stoves is universal in Germany. They are an economical and clean mode of heating apartments, peculiarly adapted to an Hospital; as they diffuse the heat more equally than an open fire.

THE BEDS.

The frames of the beds are of fir-wood, painted in a white oil-colour, and look remarkably neat. The mattress formerly used was of *flock* or of straw; but these are now discarded, and their place supplied by mattresses filled with *see-grass*, *Zostera Marina*, (Linn.) a marine vegetable lately introduced (chiefly by the exertions of the Highland Society), into Britain, as a cheap, soft, and elastic material for beds, far superior, in every quality suitable for an Hospital, to straw, wool, chaff, or cotton. This substance is light, is easily dried, and is not liable to fill the ward with dust when the beds are made or turned. A woollen blanket is stretched over the mattress. The sheets, always in two separate pieces, are of stout linen.

According to the general custom of Germany, the place of our upper blankets is supplied by a thin quilted mattress, stuffed with the same material as the lower one; and the whole is covered by a white linen coverlet, or a striped one of *Linsay-woolsey*. The beds, as usual in Germany, are without curtains.

The beds, like the wards, are regularly numbered; and over each, is a board which carries the number of the bed, the name of the patient, the nature of the disease, and the date of admission. It also serves to support the various utensils required by the patients. Near every bed is to be seen a wooden stool, a pitcher, drinking cup, and trencher of tin, or pewter, a linen towel, and a *pot de chambre*.

OPERATION ROOM.

The room for operations appears to me superior to any I have ever seen. It is large, cheerful, and even elegant. The walls are handsomely papered; its roof is glazed, and there is a large window in front; but the top light can be diminished or increased, as the operator may desire, by means of a horizontal skreen of painted cloth, moveable by cords and pulleys.

INSTRUMENT ROOMS.

The cutting instruments are kept in glazed cases, placed on tables, in a small room. This shews them at one glance, and enables the inspector to see whether they are kept in good order. They appeared exceedingly good, and are well kept;

and are the work of two celebrated cutlers in the city, Jacobsen and Pohl. Among them I perceived a fine set of Civiale's Lithontritic instruments. Another room contains presses with trusses, splints, padding for fractures, syringes, bougies, &c.

BANDAGE ROOMS.

Bandages of every sort are kept, arranged according to their kinds and sizes, on shelves, around a small apartment near the operation-room. Each bandage has stamped, on one end, its length and breadth; and when rolled up this label is outward, so that the exact sort required by the surgeon is found in a moment. In an adjoining room, bandages are dried on frames suspended from the roof by counterpoising weights. The bandage department is managed by a special clerk, who regularly enters in a book every bandage given out, and the purpose for which it is wanted.

THE BATHS.

The Baths are in the basement of the central division of the house. The warm-baths occupy eight rooms, with two or three baths in each. These consist of wooden tubs of an elliptic form, painted white, not fixed, but moveable, for the convenience of cleaning and repairing them. They are supplied from five large boilers; two of which are of cast iron, and three of copper. These boilers are supplied from large cisterns of wood lined with sheet copper, by means of float-cocks. The hot water from the boilers, and the cold water from the cisterns, pass into the bathing rooms through pipes, which open over each bath by common stop-cocks. The rooms also contain steam-pipes for vapour baths, which are nearly similar to those proposed by Cochrane; and are so contrived, that the steam may be locally applied in topical complaints; an operation which I saw performed, with advantage, on a rheumatic arm, during my visits to the hospital. To obviate cold, the towels and the clothes of the patients are suspended on a wicker frame, placed over a small stove in the bathing room. These tubs are also used as cold baths; and in one corner of the rooms I saw a powerful *douche*, descending from the ceiling, which is chiefly employed in certain maniacal cases. The fuel employed to heat the boilers is pit coal; which is not used in any other part of this establishment.

These baths are extensively employed in the cure of disease; I was informed by the bath keeper, that his journal shewed that there were, on an average, 50,000 warm or tepid baths prescribed annually in the hospital; which is at the rate of from 36 to 42 tepid ablutions for each patient in the year.

Considering that many patients cannot use the bath, it may be fairly concluded, that warm bathing is employed by the patients who are able to bear it about once a week.*

WATER WORKS.

All the water used in the hospital is derived from the *Grosse Alster*, a considerable lake, about an English mile and a half in length, with a breadth varying from one quarter to one mile, formed by confining the waters of the river Alster before its junction with the Elbe. The hospital is supplied by an hydraulic engine, wrought by oxen, and placed in the grounds of the hospital, by the banks of the river. Two oxen are yoked at once to the wheel; and eight or nine are daily wrought to supply water to the house. The water is sent by forcing pumps, through an iron pipe, into four cisterns of wood lined with copper, which are placed in the attics. The largest cisterns are 14 feet by 12; the smaller 10 by 9 feet. The daily consumption of water in the hospital is estimated at 400 hogsheads.

It may be here observed that there is an ice house belonging to the hospital for the use of the patients; and near the same place is an establishment for breeding leeches. A dissecting room for the use of students is in the neighbourhood of the hospital.

THE CHAPEL.

There is a handsome chapel in the house, 55 feet by 34, and 30 feet high. The pews on the floor are intended for the common patients. Around these are closed galleries, with glazed windows in front, into which the *boarders* are admitted from above; so that they are not seen by the pauper-patients below. In one division of this gallery convalescent lunatics are permitted to attend divine service, when it is judged proper by the physician.†

II.—ECONOMICAL DEPARTMENT.

The centre of the building is 200 feet in length, and is appropriated to various purposes. It contains the admission hall,

* How much this frequency of ablution must conduce to the comfort of patients, and the removal of disease, may readily be conceived.

† There is a regular chaplain appointed, who has a salary of 4500 *marcs* (£238): but he is not permitted to hold any church preferment with this chaplaincy, and he is bound to reside near the hospital. He must attend at all times when patients require his presence, and perform divine service twice a week in the chapel. For the benefit of the children in the house there is also a teacher of elementary knowledge on the hospital establishment.

the saloon of the physicians, the residence of the governor and his wife, the apartments assigned as an abode to the apothecary; the medicine-shop; and above, are many rooms of different sizes, occupied by *boarder-patients*.

These boarder-patients are chiefly from the class of tradesmen, or small farmers in the neighbourhood.*

In the central basement are a chemical laboratory for the preparation of drugs, rooms for the domestics, store rooms for provisions, and

THE KITCHEN.

A commodious, but not large apartment. The fuel used is turf and charcoal; and is consequently expensive; hence economy in cooking is studied; and there are numerous closed fire-places, on Rumford's principle. The dinners were in preparation at the time of my visit. That intended for the ordinary patients exceedingly good: what was preparing for the boarders was most excellent. I tasted the bread and other viands, which I found of the best quality. The soup is made in large copper boilers; which, as well as the other kitchen utensils, are kept exceedingly clean.

THE BREAD ROOM.

In so large an Hospital there is a particular room where the bread is cut into assigned portions; and this is sufficient employment for a man, who is called *the bread cutter*. The operation is performed very dexterously, by means of a large knife, the point of which is *hinged* to a table; somewhat after the manner of the knife of a tobacco-cutter. With this the work is done neatly and expeditiously. The bread used is of wheat or rye flour baked in the house.

The larders, and the provision store rooms are also in this part of the basement, but the basement of the wings contains workshops for the artificers employed in the house, and apartments for their residence, besides various warerooms, and a dead house.

The whole Hospital is lighted by oil argand lamps, though coal gas has been introduced in one or two other establish-

* The idea of admitting such patients appears worthy of notice. It encourages feelings of independence in the poor who are above accepting assistance as an eleemosynary boon, and yet can ill afford the expense of a protracted illness. Many persons are received as boarders in the Hamburg hospital of the class that with us are gratuitously relieved in our dispensaries and infirmaries,—a circumstance unavoidable where there is no medium between an expensive treatment in private, and public charitable relief; except indeed where the poor have associated themselves into *Friendly Societies* and *Sick Clubs*, institutions deserving of every encouragement.

ments in Hamburg, it is not yet used in this Hospital, where it would certainly be a great improvement; because it is more cleanly than oil, perhaps would also be cheaper, and would save much of the labour which attends the cleaning and trimming of so many lamps; a business that requires the constant attention of a superintendant of the lighting department, who is called the *lamp-trimmer*. The management of the stoves also requires the attention of the *fire-man*.

The various functionaries required in this institution will be best judged of by the following list of

PERSONS ON THE ECONOMICAL ESTABLISHMENT.

1. Governor and his wife.—2. Secretary.—3. General Store-keeper.—Under whom are—4. A Kitchen Clerk.—5. Head Cook.—6. Cook.—7. Assistant Cook.—8. Bread Cutter.—9. Grocer.—10. Porter.—11. Fireman.—12. Bath Keeper and Assistants.—13. Lamp-trimmer.—14. Messenger.—15. Ninety Sick Nurses.—16. Wet Nurses.—17. Men and Women Servants.—18. Washer-man and Assistants.—19. Baker.—20. Brewer.—21. Mason.—22. Joiner.—23. Lock Smith.—24. Upholsterer.—25. Painter.—26. Tailor.—27. Shoe Maker.—These persons live in the house: but there are besides, other functionaries, who do not reside within its walls; as—28. The Director of the Water Works.—29. Accountant. 30. Gardener.—31. Sexton.

GOVERNMENT.

The Hospital is under the direction of two boards or committees. The general committee consists of two senators of the State, the chief magistrate of police, 10 superintendants chosen from among the most respectable persons in each of the five parishes, and six administrators; in these the special management of the Institution lies. This committee assembles at least once a month, and the senior physician assists at their meetings. The administrators, with ten superintendants, and the two senators, form the sub-committee, in which the chief physician attends whenever his services are required. The general committee digests and forms the regulations; which are carried into execution by the sub-committee.

REVENUE.

The funds of the Hospital are derived from various sources. They are stated to be partly from money laid out at interest, charitable endowments, donations, legacies, and annual contributions, half yearly collections in the five parochial churches, alms collected in the boxes fixed up in the Hospital, and the

board paid by the more respectable inmates of the house. All these sources, however, have not hitherto been sufficient to defray the great expenses of this fine establishment; and a considerable *deficit* has to be supplied from the public treasury. The house expenses of the first year are said to have amounted to 240,000 *marcs*, or £16,000 sterling; and the general impression among the best informed is that the annual expenditure has since rather exceeded that sum.

III.—MEDICAL DEPARTMENT.

OFFICERS.

The head of the Medical establishment is the chief physician, who is not required to reside in the Hospital; but is interdicted from private practice, except as regards consultation at his own house. He has a salary of 6000 *marcs*, or £400 per annum; which is considered a large income in Germany, for a professional man. Next in rank to him is a *doctor in surgery*, or second physician as he is termed, to whom all surgical maladies are consigned. This person is not resident in the house; and is not interdicted from private practice. His salary amounts to 2000 *marcs*, or about £133 per annum. The two individuals who fill the above situations are *Drs. Sandtmann* and *Fricke*. The latter is one of the most eminent surgical practitioners in that part of Germany, and is engaged in very extensive practice. The chief physician has, as assistants, three junior physicians, who do not reside in the house, and have each a small salary of 500 *marcs*, or about £33 per annum; but the office is an object of emulation, as honourable, and as affording excellent opportunities of professional improvement.

The head of the surgical department is assisted also by three junior surgeons, who are bound to reside in the house. To these are confided the minor operations, and the general care of the surgical patients. They have salaries of 500 *marcs*; but the practical knowledge they can here acquire renders the office of surgical assistant a valuable appointment to young gentlemen who have completed their academical career.

The cases of the patients are most regularly taken down from the dictation of their superiors by these assistant physicians and surgeons, the varying symptoms are duly noted at each visit, and the prescriptions scrupulously entered, according to printed formulæ, to be noticed hereafter. The care with which these annotations are made, affords a contrast to the slovenly entries in the *Case-books* of many of our hos-

pitals, from which it would be no easy matter to extract any thing like a regular history of the cases.

All these medical officers I found to be not less distinguished by their intellectual and professional attainments, than by their gentlemanly deportment.

There is on the establishment an apothecary and four assistants, who all reside in the Hospital. They have to prepare drugs, to compound prescriptions, and to direct the administration of medicines. They are assisted by five inspectors of the sick (*oberkrankenwärter*) each of whom has the charge of one of the five principal classes into which patients are divided. These inspectors live in the house, and have charge over the 90 attendants and sick nurses usually on the establishment.

CLASSIFICATION OF PATIENTS.

The males occupy the south-western, the females the north-eastern side of the Hospital. They are subdivided into several classes, always distinguished in the Hospital reports in the following manner:—

1. Internal Diseases.—2. Contagious Epidemics.—3. Insanity.—4. Local or external Diseases.—5. Itch.—6. Syphilis.

Two other divisions of the inmates of the house may be noticed—

7. Orphan Infants.—8. Incurables.

The three first divisions comprehend all the cases which usually fall under the care of the physician. To the first division 46 wards are allotted, with 484 beds. The contagious epidemics are received into appropriate wards, that are kept detached from the rest;—but the number of patients is very variable. I perceived nothing remarkable in these two divisions. Intermittent fevers, as might be supposed in the neighbourhood of low marshy islands and plains, are pretty frequent. The general mode of treatment is by sulphate of quinine, after evacuations. Arsenic as a remedy in this disease seemed to be but little employed. In typhus, scarlatina, and variola the Hamburg practice is much the same as ours. Vaccine inoculation maintains its reputation.

The maniacal patients at present occupy 43 wards and cells, containing 246 beds, in the two posterior parts of the wings. The noisy and dirty patients are lodged in the basement of the posterior pavilions. In the original plan, a detached asylum was intended to have formed a fourth side of the quadrangle: but the expense of the other buildings has delayed the accomplishment of this benevolent intention. The poor maniacs are lodged in rather confined quarters; and their airing ground

is not sufficient; but the convalescents are occasionally introduced into the other parts of the Hospital; a circumstance which the chief physician seemed to think, in many cases, of utility. Among the means of cure, they here employ the *whirling-chair*, a high and powerful *douche* with frequent tepid baths. The general mode of treatment is mild and rational.*

The fourth division embraces the cases purely surgical; which are contained in 19 wards, intended for 228 beds. The modes of treatment differ little from the ordinary plans of modern surgery. In the wards with fractured limbs, I observed a contrivance for raising the patient, so that his sheets or the whole bedding might be changed, without the risk of deranging the fractured bones. It consists of an additional frame, with braces of *web* stretched from side to side, in such a manner that the braces could be individually and easily withdrawn. The whole frame can be raised with the patient on it, by means of a small windlass at each end of the bed.

There were several cases of fractured femur in the Hospital, to which the following contrivance was applied. Two pieces of wood, reaching from the superior crest of the ilium to the sole of the patient's foot, were placed on the outside of each thigh, and were firmly fixed to a stout foot-board, on which his feet rested. Their upper extremities were secured to a belt passing round the body; and cross-bands of *web* connected them together, forming a sort of cradle for the limbs to rest on. The limbs, properly padded and defended were strapped to each *side piece* of wood: so that, in moving, the pelvis and limbs formed one inflexible mass. By this contrivance, the patient can be raised to be cleaned; or even raise himself, with the assistance of a wooden roller eight inches long, and of a sufficient thickness to be firmly grasped, suspended by a strong double strap securely attached to the frame over the bed. A Scottish seaman whose femur had recently sustained a simple fracture about its centre, shewed me how well he could raise himself to allow the changing of his bed clothes, without the least danger of disturbing the due apposition of the ends of the fractured bone.†

* Persons labouring under frequent epilepsy, so as to impair their faculties, are included in the same division of the establishment as the insane, and are classed with those afflicted with fatuity.

† To this division belong two additional wards, appropriated to diseases of the eyes. They contain 58 beds, which are often occupied.

Patients affected with the various forms of scabies are kept apart, in five wards, containing 100 beds. Itch in some of its forms is rather prevalent among the poor of Hamburg and its vicinity: perhaps owing to the severity of winter, and the dearness of fuel, being little favourable to ablution. This is rendered more probable by the fact of these wards being in winter crowded to a very inconvenient excess. The patients of this division are classed according as the disease is simple or complicated with other disorders. Sulphur is here very little employed against itch. The usual application is an ointment of tar. On their admission patients are stripped naked, tar is laid on with a brush, and they are put to bed, without shirts or sheets, between blankets, in an outer ward; and the tar is repeated according to the state of the case. In the outer ward they usually remain three days; when they are removed into another ward, and the beds are still without sheets. By this process the disease is generally speedily subdued; and clean bedding, warm baths, and an aperient complete the cure.

The division set apart for syphilitic patients is extensive, and was fully occupied. The mode of treatment in Hamburg differs so materially from the usual methods in our hospitals, that it demands more attention than we have given to the other diseases noticed in this paper; and I shall offer some remarks, both on the practice pursued, and on the character which syphilis usually assumes in a city where the *Filles Publiques* are under the control of the police.

In so great a seaport, in so luxurious a city, it may readily be supposed that Syphilis is not a rare disease; and from the constant influx of persons from every quarter of the globe, one might be led to conclude that the disorder, in its most disgusting forms, might be found in the Hospital of Hamburg. In this, however, we should be mistaken. I had the satisfaction of accompanying Dr. Jacobson, of Copenhagen; Dr. Eckström, of Stockholm; and other eminent physicians, to the Hospital, where Dr. Fricke had the kindness to submit to examination a great number of Syphilitic cases, and to detail the history of each, as he pointed out the various stages of the complaint.

The public prostitutes, on the first symptoms of this disease, are compelled to enter this Hospital; and we had full leisure and opportunity to examine the various forms of the disorder to which they are liable.

The mode of inspection is very minute, and is regularly practised, in all cases, by the medical officers, with a patience and manliness to which there is among us no parallel. Every change of symptoms perceived by Dr. Fricke is announced,

and immediately entered in the case book by one of the assistant surgeons. Among 30 or 40 females of that class, then minutely inspected, I did not discover a single instance of deep chancre with retorted edges. The chief symptoms were slight ulcerations, often little else than excoriations, *condylomata* or warty excrescences; and in incipient cases, specks of purulent matter filling the orifices of the mucous follicles or glands on the parts within the *labiæ*, and which were often so minute as to require a magnifier to render them apparent. In this insidious form of the disease, as Dr. Fricke remarked, the several symptoms of Syphilis may be communicated by a female, without her being at all aware that she is diseased. Such instances he stated as having often fallen under his observation. He pointed out many examples of this affection of the mucous follicles within the *labiæ*; and, with a fine silver wire, demonstrated the existence of minute collections of matter in them, and, by slight inflammatory action, for a time closing their orifices. Among all the prostitutes here collected, I did not perceive a single case of ill-conditioned chancre, or of corroding ulceration; and even simple buboes were not very numerous.* Of secondary Syphilis, with the exception of a few cases of cutaneous eruptions, and ulcerated throats, chiefly among seamen, there were fewer traces than I ever saw among so many patients labouring under this disease. *Blenorrhœa Impura* and *Leucorrhœa* are very frequent, especially among the prostitutes.

Every form of Syphilis is treated in the Hamburg Hospital WITHOUT MERCURY IN ANY FORM: and I have the authority of Dr. Fricke, and of all the other medical gentlemen of the establishment, for the important fact, that they never find the disease to require its use, and that this mode of treatment is not more liable than the mercurial one to be followed by what are considered as secondary symptoms.

I did not find a single instance of any person disfigured by the disease; except one female, whose nose had fallen in *before* she was received in the house; and she had previously undergone a severe course of mercury in Berlin. Since her admission here, she has been treated on the anti-mercurial plan; and when I saw her, she appeared to be convalescent. This method of cure consists in frequent ablutions with tepid water, a very rigid low diet almost amounting to starving,

* The ill-conditioned chancre with ragged retorted edges might indeed be found among sailors received into the Hospital; but the remarkable exemption of the public prostitutes from the severer forms of the disease is not a little worthy of attention.

brisk purgatives and rest. Zinc and saturnine lotions are occasionally employed, but the circumstances above enumerated are the great means of cure. Even sarsaparilla is little used; and mercurials never. The success of this practice is established by the experience acquired in the present Hospital and its predecessor, at least as far back as 15 years ago.

Dr. Eckström, physician to the king of Sweden informed me that the same treatment had been still longer pursued at Stockholm with equal success; and that the practice was adopted at Hamburg from the example of the Swedish Hospital; which however borrowed it from the Royal Hospital at Copenhagen, where it had been established by the experience of a Danish physician, a pupil of our celebrated John Hunter.

After the demonstrations were concluded, Dr. Fricke asked my opinion on the nature and treatment of the diseases he had shewn. On remarking that few of the cases among the prostitutes appeared to have what we considered decided marks of virulent Syphilis; and that many of them would be considered little more than excoriations, or the consequences of gonorrhæa; he justly remarked "Whatever opinion might be entertained on that subject, it was no less remarkable, if we refuse to give the name of Syphilis to these diseases, that, among the class of persons most exposed to venereal infection, the public prostitutes, in one of the largest seaports of Europe, proverbially dissipated, true syphilis is unknown: for we had seen every variety of the disease which is usually met with in Hamburg."

He further added that the anti-mercurial mode of treatment had *never*, to his knowledge, been followed by diseased bones, unless where much mercury had been previously used; and the remark was confirmed by Dr. Eckström.

There is one circumstance which probably tends greatly to check in Hamburg the more formidable ravages of Syphilis.

The *Filles Publiques* in that city are all registered; are all compelled to submit to weekly examinations by a surgeon appointed by the state; and must have a *license* from the police for carrying on their vocation.

This license they are bound to produce, as well as the attestation of the surgeon as to their soundness; and should any unfortunate fail to produce these when required, or be convicted of wilfully concealing any symptom of disorder from the visiting surgeon; she not only forfeits her license, but is liable to be committed to the house of correction. This severity of the police has the effect of preventing a prostitute spreading unrestrained the seeds of disease around; and the magistrate, whose duty it is "*ne quid detrimenti capiat respub-*

lica," has endeavoured by the terrors of correctional police to mitigate the evil which he cannot wholly suppress. Similar regulations on this subject exist in Paris; and it must be confessed that both there and in Hamburg, whatever opinion the moralist may entertain on such indirect encouragements to dissipation, that the ear and eye of modesty are far less offended in these cities by obscene words, and disgusting open profligacy than in the streets of London or Edinburgh.

IV.—HOSPITAL REPORTS.

No part of the management of the Hamburg Hospital appears more excellent than the regular system of *Reports of Cases*, and of the general state of the establishment.

The cases of the patients are entered on their admission, and the symptoms are from day to day noted at the bed side of the patient. To each patient a detached leaf is dedicated, on which the symptoms and mode of treatment are entered in ruled columns appropriated to each head. These leaves are carried in a portfolio by one of the assistants, while the chief medical man is making his rounds. These reports are afterwards collected and bound up into volumes, which present regular, connected, histories of every case.

Each ward has a monthly register, (Table I.) with columns for the number of the beds, the name of the patient, and daily notices of their progress.

Each ward has, besides, a monthly diet table, (Table II.) with ruled columns for the number of the bed, the name of its occupant, the rations, and the extra allowances.

The register for entering the cases of prostitutes. (Table III.) has a different form. Its columns are for the year. Month. Day. Number of the register. Number of the division. Name of the patient. Condition or trade. Reception from without—from other divisions. Police certificate. Medical certificate. Disease. Event. Cured or improved. Not cured. Died. Remarks.

Table IV. is a general table, shewing the whole number of persons on the establishment, whether officers, attendants, or patients; with the circumstances under which the latter were admitted, and the result of the treatment. It will be best understood from inspection.

The regular system of management, and the correct returns required, keep every person on the establishment attentive to his duty; and I repeat, that I have never seen a large hospital conducted with more regularity in its detail, or with greater attention to the necessities and comforts of the sick.

TABLE I.

WARD		DIVISION.						MONTH —	
Bed.	Name of the Patient.	Day 1.	Day 2.	Day 3.	Day 4.	Day 5.	Day 6.	Day 7. &c.	
1									
2									
3									

TABLE II.

[illegible]

TABLE III.

[illegible]

TABLE IV.

[illegible]

ART. IV.—*Further Observations on the Action of the Heart.* By DAVID WILLIAMS, M.D., Physician to the North Dispensary, Liverpool.

PART I.

As my former communications on the physiology of the heart, were published in the *Edinburgh Medical and Surgical Journal*,* it may be here proper to state, that in those papers I advanced the opinion, that the second of the two consecutive sounds which we hear in the cardiac region, is the effect of the action of the muscoli papillares;—these muscles, at the termination of the systole, drawing back the auriculo-ventricular valves, into the ventricles, with such rapidity, as to cause this sound. The data by which I endeavoured to demonstrate this proposition have been cursorily examined by Dr. Corrigan. It is in order to reply to this gentleman's remarks, and to investigate the cause of the heart's impulse, that I am induced to offer the following observations. For the sake of tracing more methodically the action of the ventricles, we shall first examine the nature of the impulse of the heart.

Mr. John Bell,† in describing the movement of the heart, which we denominate its impulse,—says, that the ventricles, during their systole, assume “a form slightly curved, the point turning up like a tongue towards the basis, and the basis in some degree bending towards the point. The basis, indeed, is in some degree fixed to the diaphragm and spine, but the heart in its contraction always moves upon its basis as upon a centre: its ventricles, and especially its apex, are free; the point rises and curves so as to strike against the ribs; and the dilatation of the heart is such (together with the posture and relation of its several parts) that during the dilatation, the heart turns upon its axis one way; the contraction of the heart reverses this, and makes it turn the other way, so that it seems to work perpetually with the turning motions of a screw. All this is most striking while we are looking upon the motion of the heart in a living creature.” Several theories have been advanced to explain the cause of the impulse of the heart; and lately these theories have been reviewed by Dr. Corrigan, in an essay on the motions and sounds of the heart.‡ Dr. C., in this essay tells us, that it long since occurred to him, “that

* Number for October, 1829, and April, 1830.

† See *Anatomy and Physiology of the Human Body*, vol. i., p. 486.

‡ See *Dublin Medical Transactions*, 1830.

the causes assigned for the most remarkable action of the heart, its impulse against the side, were unsatisfactory, and insufficient, and that the descriptions of its movements were probably erroneous." Afterwards he adds—"All physiologists assume that the heart comes forward during the systole of the ventricles. It is universally admitted that during their systole, the ventricles contract in all directions, the sides coming together, and the apex of the heart approaching the base. It was obvious therefore to all, that the simple contraction of the ventricles, so far from making the heart approach the ribs, should draw it deeper into the chest, and hence, reasons were sought for, to reconcile the diminution of size, and consequent retraction, with its impulse against the side." After reviewing the explanations offered by Senac, Alderson, and others, to solve this difficulty, Dr. Corrigan observes;—"I have now I believe, gone through all the explanations which have been offered to account for the beat of the heart against the side, and shewn, I hope satisfactorily, that all the causes assigned, would either produce an effect diametrically opposite, or are totally insufficient to accomplish it."

Dr. Corrigan next proceeds to point out the want of perfect synchronism, between the impulse of the heart against the side, and the pulse in the radial artery. From this circumstance and the result of inspection of the action of the heart in the living animal, he concludes that, "the heart strikes the side, or, gives its impulse, when the auricles contract." "All physiologists" adds Dr. C. "have fallen into the mistake of supposing, that the impulse of the heart and the impulse of the artery are synchronous, and hence, have founded on false premises their conclusion, that it is when the ventricles contract, the heart comes forward." In considering the explanations offered by Senac, and others, to be quite inadequate to account for the beating of the heart against the side, I perfectly agree with Dr. Corrigan; but I cannot give my assent to the explanation which Dr. C. himself offers. It is unnecessary here to state particularly my reasons for considering the theories of the heart's impulse to be unsatisfactory, as they will appear sufficiently obvious as we proceed with the investigation of our subject.

Though we may say that the anatomy and the movements of the heart are within the scrutiny of our senses, nevertheless the structural complexity of the former, and the impossibility of observing the exact limits of the latter, oppose difficulties of no ordinary nature to the elucidation of the physiology of this organ. Indeed, so complicated is the mechanism of the heart, that physiologists have thought it useless to refer to it

for information respecting its action. Mr. John Hunter, in his treatise on the blood, remarks. "Much more pains than were necessary have been taken to dissect and describe the course and arrangement of the muscular fibres of the heart; as if the knowledge of the course of its fibres could in the least account for its action. But as the heart can, in its contracted state, almost throw out its whole contents, to produce this effect, its fibres must pass obliquely." With every deference to so high an authority, I cannot accede to the notion that the knowledge of the course of the fibres is incapable of throwing light upon the action of the heart. For, if we carefully examine the nature of the impulse of the heart of the dog, and appeal to the organization in reference to it, we shall find, in my opinion, conclusive evidence in favour of this movement being the effect of the action of certain muscular fibres of the heart itself.

Authors tell us, that if the heart of a recently killed animal, yet palpitating, be detached from the body, and placed upon a table, the apex is seen to rise at each systole, while it continues to act. This movement of the apex is attributed simply to the heart assuming, during its ventricular systole, a more rounded form. Let us examine the nature of this movement, and see whether it be analogous to the one which occasions the heart to pulsate in the living animal. When we inspect the action of the heart of the dog detached from the body, and placed upon a table, with its right ventricle *undermost*, we observe no raising of the apex during the systoles; on the contrary, the apex seems to cling rather more closely, during the systole, to the table. If the heart be turned, and the right ventricle be placed *uppermost*, then we perceive the apex to be raised or tilted, during each systole. I am not aware of this circumstance of the apex of the detached heart being raised from the table, only when placed in a certain position, having hitherto been remarked. As this takes place when the right ventricle is *uppermost*, it is obvious that the point of the heart must be raised towards the basis of the right ventricle; also, that the heart assuming a more rounded form during its ventricular systole is not the cause of the tilting of the apex, otherwise it would be tilted whichever aspect might be undermost. On inspecting the heart of the dog *in situ*, we observe the apex at each systole to be tilted; this movement is unquestionably towards the basis of the right ventricle. At the same time the apex is raised, the heart is somewhat turned upon its axis, reversing the position it falls into during the diastole of the ventricles.

Dr. Corrigan, in describing the movements of the heart, in experiments made on living warm-blooded animals, and like-

wise on reptiles, says—"Authors describe the point of the heart as being tilted up, struck against the ribs; we could observe no such motion. The heart first applied itself to the parietes of the chest by a small surface almost midway between the base and the apex." It is difficult to conceive why the tilting movement of the point of the heart, was not observed in the vivisections of those *warm-blooded* animals which were made subjects of experiments by this gentleman and his colleagues. From the account which Haller gives of the impulse of the heart of the quadruped, it is very evident that he had paid particular attention to the nature of the movement. In his description of it he says, that,—‘During the systole the figure and situation of the heart are both changed. In the quadruped the point of the heart in approaching the base, which while changing its position to the right and anteriorly accomplishes a rotatory movement, describes an arc of a circle. At the close of this movement and according to the age of the person, the heart strikes against the fifth or sixth rib, and is what we call the impulse or beat.’* With regard to the action of the heart of the frog, (referred to by Dr. Corrigan) I beg to remark, that unless the delicate membrane, which connects the posterior or vertebral aspect of the heart to the contiguous parts, be completely divided, the apex is not elevated, at least whilst the animal is kept stretched upon its back; but after the membrane has been completely divided, then the apex is elevated during the systole. Further, if we remove the heart, and place it on a plate, the apex, when the vertebral aspect is undermost is elevated at each systole; but, when the sternal aspect is undermost, then the apex, during the ventricular systole, clings more closely to the plate: thus exhibiting similar phenomena to the heart of the dog. From these circumstances I consider the ventricular portion of the frog’s heart to be complicated; further reasons for which I shall adduce hereafter.† The frog’s heart offers a beautiful illus-

* *Elementa Physiologiæ*. Tom. i. Cordis pulsus. His words are. Non vero figura sola cordis in systole mutatur, sed una situs. Nam mucro cordis in quadrupede, dum ad basin accedit, dextrorsum et antrorsum circa basin parum dimotam, tamquam extremus radius circa firmum cardinem, arcum circuli describit, inque termino sui motus costam quintam sextamve, uti varia erit hominis ætas, ictu percutit, quem pulsum dicimus.

† In naming my conjecture to Dr. Traill, (while inspecting the action of a frog’s heart) a few days after his return from the congress of naturalists and physicians, which was held last autumn at Hamburg, he informed me that Professor Schulby of Freyberg had read a paper at that meeting on the complication of the hearts of reptiles, and that he had demonstrated the complexity of the heart of the *Coluber Natrix*. Mr. John Hunter remarks—"In the amphibia there is an attempt towards a heart both for the lungs and body, but not two distinct hearts."—Hunter, on the Blood, &c. p. 144.

tration of the auricular action. If we suspend the apex so that we may see through the heart, we perceive at each auricular contraction, a wave of blood entering or thrown into the ventricular part of the heart with considerable rapidity. The entrance of the wave is followed as quickly as can be conceived by the ventricular systole. The period taken up by the latter action cannot be appreciated by the eye, but if we can rely upon the touch it is undoubtedly comparatively slow to the auricular contraction.

From the apex being tilted in the same direction, both before and after the removal of the heart of the dog from the body, little doubt can be entertained of the identity of action, that is, that the tilting of the apex, both before, and after the removal of the heart from the body, is the effect of one and the same cause. If so, this cause must arise from the structural arrangement of the constituent fibres of the walls of the ventricles of the heart. To trace and describe the course of *all* the fibres of the heart, would indeed be a difficult undertaking, but the dissection of the dog's heart previously prepared by long-continued boiling, affords easy demonstration of the evidence which I have to offer in favour of the foregoing corollary. We shall then proceed to the demonstration of those muscular fibres alluded to, and at the same time, shall take a survey of the form and structure of the heart generally.

The heart should be boiled until the filamentous tissue which connects the ventricles to the auricles and arterial trunks is entirely dissolved. After the latter have been removed from the former, we find two distinct apertures into the right ventricle, and one only into the left, there being no muscular septum between the aorta and the auriculo-ventricular communication, as there is between the auricular orifice of the right ventricle and that of the pulmonary artery. The external muscular fibres of the walls of the ventricles are arranged in layers, and the internal affect the columnar form. Some fibres are common to both ventricles.

In unravelling the muscular fibres of the heart of the dog, we find the apex cordis to belong wholly, and the interventricular septum principally to the left ventricle. This ventricle is in shape an obtuse cone, internally around its circumference it is concave, and the axis of the basilar aperture corresponds with the axis of the cardiac cone. The muscular fibres which form the parietes of the left ventricle wind spirally around it, save those of the muscoli papillares, which shall be noticed hereafter.

The right ventricle is shorter than the left, and is in shape trilateral pyramidal, its apex is in the direction of the apex

cordis, and its base corresponds with that of the heart; the base is not horizontal, but inclines from the pulmonary artery to the auricular aperture, it being at the former point elevated somewhat above the plane of the basis of the left ventricle. The right side (anterior-inferior of the human heart) of this trilateral cavity, descends from the auricular orifice perpendicularly to the apex cordis. The left side (posterior-superior of the human heart) winds in a spiral curve from the apex ventriculi dextri to the aperture of the pulmonary artery. This ventricle has an anterior-external, and a posterior-internal wall, the latter contributing to form the septum cordis. Some of the fibres of the anterior-external wall run obliquely, others transversely, and are reticulated in a most surprising manner. The interior of the right ventricle presents two surfaces, one convex the other concave. This arises from its being as it were wrapt round a segment of the left ventricle, hence the base of the right ventricle is crescent-formed, having the auricular aperture at the right corner, and the aperture communicating with the pulmonary artery at the left corner;—the anterior-external and the posterior-internal walls uniting between these two openings. The axis of the auricular aperture of the right ventricle does not correspond with the axis of the cardiac cone. The fibres of the muscular stratum of the posterior-internal wall of this ventricle demand our attention, particularly those that are superficial or immediately under the lining membrane of the ventricle and columnæ carneaë. I must observe, that the relative position of the base and left side of this trilateral cavity to each other, is such, that if lines were drawn perpendicularly to the base of the right ventricle, from the auricular to the arterial aperture, they would progressively intersect the left side of this ventricle from the apex ventriculi dextri to the aperture of the pulmonary artery. The fibres in like manner, which form the muscular layer of the posterior—internal wall, run from the basilar margin perpendicularly to the basis, until they arrive at the left side of this ventricle, where they interlace with the fibres of the anterior external wall and those of the left ventricle.*

* Senac, in his *Traité de la Structure du Cœur*, gives the following description of the fibres of the muscular layer of the posterior—internal wall. “Ces fibres sont obliques, elles descendent vers la point en partant du bord inferieur de la cloison; ce n'est pas à un ventricule seul qu'elles appartiennent, il en sort une couche du réseau des colonnes sur le ventricule droit; on voit clairement cette origine; mais cette couche est adossé à une couche paralelle des fibres obliques qui entourent le ventricule gauche, c'est-a-dire, qu'elles ont l'une et l'autre la même obliquité: à en juger cependant par les déchiremens, ces deux couches semblent, n'en former qu'une; on ne peut pas les diviser comme si elles étoient composées de filets entierement séparés.” Tome premier, chap. ix. L'union des deux ventricules.

From this it is obvious that some of the fibres which arise from the edge of the auricular orifice, interlace with the fibres of the left ventricle at the apex cordis.

It is these latter fibres then of the posterior-internal wall, more especially, which I consider to be the principal agents in raising or tilting the point of the heart during the ventricular systole. I think the course which the fibres of the superficial layer of the posterior-internal wall run, relatively to the basis of the right ventricle, to be precisely similar in all warm-blooded animals. For, in the human heart, as well as in that of the ox, sheep, pig, goose, and turkey, the fibres of the superficial muscular layer of the posterior-internal wall, run from the basilar margin perpendicularly to the basis of the right ventricle, just as in the heart of the dog. It is scarcely necessary to remark, that correspondent motion must result from the action of correspondent muscular structure; hence, that the hearts of animals, which have similar organization to that of the heart of the dog, have also correspondent movements.

Further considerations respecting the heart's impulse, and my reply to assertions which have been advanced against the theory which I have offered, to explain the cause of the second of the two consecutive sounds heard in the region of the heart, must be reserved for another occasion.

ART. V.—*On Excision of the Elbow Joint; with a case.*

By WILLIAM HEY ESQ. late surgeon of the Leeds General Infirmary.

IT is now just fifty years since the late Mr. Park of Liverpool first proposed the excision of the larger joints, especially those of the knee and elbow, as a substitute for amputation, in cases which required one or other of those alternatives for the preservation of life. He seems to have been led to the proposal of this practice, by observing the mildness of the symptoms, which often followed sawing off the protruded extremities of the bones in compound dislocations. He published his observations when he had performed but one operation of this kind, viz. on the knee joint; which, however, was attended with complete success, for the subject of it was enabled to perform the arduous duties of a seafaring life, and was never affected by any return of disease in the limb, but came to his death by accident some years after.

It is somewhat remarkable, when we consider the vast importance of a limb to the labouring classes, especially of an arm

for which every substitute must be very imperfect and inefficient, that this promising suggestion of Mr. Park should not appear to have been followed up in practice even by himself; and that in this age of enterprise and improvement, other surgeons in the United Kingdom should not sooner and more extensively have availed themselves of it.

The M. M. Moreau on the continent, followed by Baron Percy, were not slow in adopting Mr. Park's operation, and extending it to diseases of the shoulder and ankle joints. Yet though their success was sufficiently encouraging, the operation met with much opposition, and does not seem to have come much into use on the continent, but to have fallen there also into neglect.

We have no farther account of excision of the large joints, till Mr. Crampton of Dublin revived the practice in 1823, in which year he performed the operation three times, once on the elbow and twice on the knee: the cases were published in the Dublin Hospital Reports for 1827. About a year after the publication of these reports, Mr. Syme of Edinburgh adopted the practice. In the Quarterly Report of the Edinburgh Surgical Hospital, he says—"Little more than a year ago, in Nov. 1828, I cut out a carious elbow, for the first time the operation was ever performed in Great Britain. Since then I have operated in six cases."*—It is quite natural for Mr. Syme to presume that no surgeon in Great Britain had preceded him in the excision of the elbow joint, as no such case had been recorded; but I might here put in my claim to priority in this operation, having performed it four times in the Leeds Infirmary between the years 1816 and 1819. One of these patients died from an attack of Erysipelas, which was then prevalent in the Infirmary. Two others having remained some months in the house were first made out patients, and subsequently discharged for non-attendance, so that I cannot say whether their cures were complete: but from the length of time they remained under treatment, I should fear that neither of them became quite sound. Of the fourth I do not find the account. My colleague, the late Mr. Stansfeld, performed the operation once, though to the best of my recollection he did not remove the whole articulation, but such part of it only as appeared diseased. I believe the operation has not been repeated in our infirmary since the year 1819, till I lately performed it on a little girl, whose case I will now relate.

Sarah Armitage of Leeds, aged 13, a delicate looking girl of a highly nervous temperament, was admitted an out patient of

* See Edinburgh Med. and Surg. Journal for 1830.—Vol 33, p. 233.

the infirmary under my care, Sep. 29, 1830, on account of two scrofulous abscesses, one upon the shoulder, and the other upon the left elbow. She had been a patient under Dr. Williamson's care about a year previous, for an affection of the chest. When the pulmonary complaint was removed, several scrofulous abscesses appeared upon the shoulder, which were cured by suitable treatment, and she was afterwards sent to Ilkley for the establishment of her health, where she derived much benefit. Her mother being a widow, not in good circumstances, it is probable that her diet was not very nutritious and the improvement of her health was not of long duration; for about the end of Sep. she was admitted an out-patient, as before stated, for the abscesses on her shoulder and elbow. They were superficial, and having been opened, the former soon healed, and the latter was apparently doing well, when she was attacked with epileptic fits, attended with much fever and pain in the head. In one of these fits she fell upon the diseased elbow, the whole weight of her body resting upon it. The accident was succeeded by severe inflammation in the joint, which seemed, as by metastasis, to relieve the head. The slightest motion of the joint occasioned extreme pain; and notwithstanding the prompt use of antiphlogistic treatment, the inflammation was not immediately arrested. In about a week the fever began to abate, and the elbow became less painful, though the joint was considerably enlarged. For a few weeks it was dressed in the manner recommended by Mr. Scott, and she took *Mist. Ferri comp.* $\mathfrak{z}\text{j}$ *ter die*. It soon however became apparent that the capsular ligament had been destroyed, and the bones become carious; and that nothing short of the removal of the arm, or of the articulation could effect a cure. The patient being young, and the disease not very extensive, or complicated, it appeared to me a suitable case for the excision of the joint, and with this view she was made an in-patient on the 19th Nov. The integuments were pretty healthy, and not ulcerated except where the original abscess had been opened, which was near the external condyle. Having kept the limb in a quiescent state, and the patient's general health being tolerably good, I removed the joint on the 18th Dec. Being laid upon her right side, and the diseased (left) elbow uppermost, I made a longitudinal incision between three and four inches in length over the right condyle, beginning nearly two inches above the joint, and extending it to the same distance below. A similar incision was then made parallel to the former, as near the internal condyle as I could to avoid the ulnar nerve. These two incisions were united by a tranverse one immediately above the olecranon, which penetrated the joint,

the three incisions together being in the form of the letter H. The two flaps were then dissected back, and two small arteries secured. I found the joint open between the external condyle and the olecranon, and its cavity filled with fungus. The olecranon being evidently carious, I first sawed through the ulna, so far down as to include the coronoid process, with one of the small cranium saws described in Hey's "*Observations in Surgery.*" This portion of the ulna being removed, the joint was easily dislocated, and the extremities of the humerus and radius exposed. The latter appeared sound except a slight ulceration on one edge of its articular cartilage. Thinking it advisable to remove the cartilage, I found the bone itself so soft as to be easily cut with a knife. I therefore sawed it off on a level with the ulna, where it was of a harder texture. The internal condyle of the humerus being perfectly sound, I left it undissected from its attachments, and sawed off the external condyle, with the greater part of the shaft of the humerus, about an inch in length, with the same cranium saw. The edges of the wounds now came easily together, and were secured in their proper place by sutures and strips of adhesive plaster, covered with ungt. cetacei on lint. A calico roller was applied wet from the fingers to the shoulder, and the arm placed on a pillow, bent scarcely so much as to a right angle, with the elbow somewhat depending. An evaporating lotion was ordered to be constantly applied as soon as reaction should take place. Tinct. opii gts. xxx. to be given immediately. The little girl, who was of a remarkably timid disposition, bore the operation with wonderful courage and patience; she had been far more agitated, indeed, by the simple incision of the abscess.

December 19th.—9 A. M. She has slept at intervals during the night, and her arm has been free from pain since last evening. She has taken tea and coffee this morning, though without much relish. Her countenance is composed; pulse 130; tongue moist; bowels rather confined.

R Magnes. sulph. 3ss. 4â quâque horâ sumend. Contr. lotio evaporans.

The position of the limb not changed.

7 P. M.—Feels inclined to sleep; pulse 130; fluttering; skin moist: bowels open; has taken tea and coffee with relish. Her arm is easy, though there is a slight increase of swelling.

20th.—Is more feverish, but the limb is almost free from pain, and she enjoys her tea and coffee. She has had three or four motions since yesterday, the magnes. sulph. is therefore discontinued. The bandage and ointment plaster were renewed, and the limb appeared in a favourable state. Contr. lotio evaporans.

9 P. M.—The limb is more painful and inflamed than hitherto since the operation, and there is more constitutional irritation. In consequence of the increase of pain in the limb, the bandage was removed, and the adhesive plaster partially so, which appeared to give great relief. *Conr. lotio.*

21st.—8 A. M. Has had a comfortable night, and her fever is much abated. The whole of the dressings were removed, and the wound appeared in a favourable state, having united at several points. Strips of adhesive plaster were applied in such a manner as to keep the edges of the longitudinal wounds in contact, except so much as seemed necessary to afford a sufficient outlet to the matter. The openings were covered with ointment plaster, and the lotion continued to the limb.

22nd.—She appears much better to day, and her appetite improves. She took a little meat yesterday with much relish. The soft dressing renewed, and lotion continued. There is a considerable discharge of healthy pus.

23rd.—Some of the sutures came away by ulceration—the wounds were dressed as before—all symptoms favourable.

25th.—Wound dressed, and sutures all removed. As there was a slight lodgment of pus in the course of the radius, it was thought better to apply a bandage. *Conr. lotio.*

R Decoct. cinchon. ʒj ter die.

26th.—Has had five stools in the night attended with griping.

R Haust. rhei arom. cum gr. xv. statim sumendum.

27th.—Going on well. Discharge still considerable. Lotion to be discontinued; the wound to be dressed with ungn. *resinæ flavæ* and soft dressing. Has had meat and half a pint of beer for the last three days.

January 2nd.—The discharge decreases, and the cavity is filling up rapidly with healthy granulations. General health very good; takes now a pint of beer daily, and meat as usual.

19th.—Going on well; but the ulcers in the house shewing a tendency to degenerate, she was made an out-patient, in hopes that a better air might promote her recovery.

February 9th.—She had an attack of epilepsy attended with fever, similar to that which preceded the inflammation of the elbow joint. At this time her arm was well, with the exception of a few superficial ulcers in the course of the longitudinal incisions, and she was able, by the assistance of her right hand, to move the arm freely without pain; but she had not regained the power of the muscles.*

* It may be proper to notice that I resigned my situation at the Infirmary a few days after this operation, and the case fell under the care of my son, who succeeded me. I am indebted to Mr. Russell, one of my pupils, for the history of the case, since that period.

I saw this patient about a fortnight ago (the end of March,) when I found her general health much impaired, and the elbow somewhat enlarged. The transverse incision was quite healed, and the cicatrix scarcely visible. The longitudinal ones were also healed except three small ulcers which had become deeper, but I could not with a probe feel the bone. I hope that, as soon as she can be removed to Ilkley, where she had before derived so much benefit, her health may be improved, and a corresponding effect produced on the limb.

The idea of substituting the excision of diseased joints for amputation, is ingenious and scientific; and the conception of it which is justly due to the late Mr. Park, must reflect great credit on his memory. Could we entertain the hope that this practice would be generally successful, it must be considered as a most substantial improvement in surgery; but with a strong desire to promote the extension of the practice, as may be inferred from my early adoption of it, I cannot suppress my fears that the operation will be attended with so many disappointments as to prevent its becoming general. The circumstance that Mr. Park lived about fifty years after his operation without repeating it, though completely successful, cannot but excite a feeling that his expectations became less sanguine. In cases of accident, or of diseases arising from accident, the practice gives every promise of success which can be reasonably desired; but it must be allowed, that, in a great majority of those cases where the disease of joints requires their removal, the constitution of the patient is strumous, his health impaired, and the tendency to disease in the bone not accurately defined. It is well known that the extremities of the bones in scrofulous joints are enlarged and softened to a much greater extent than the existence of actual caries. Hence they are liable to degenerate, after the operation, and to become carious at no distant period. Perhaps the very inflammation excited by the operation may prove the cause of a fresh caries, which may discourage a patient from submitting to a second, as well as render him less able to sustain it. It is far from my intention, in these remarks, to oppose or discourage the excision of carious joints; but in order to avoid the discredit to the operation which may result from frequent disappointments, it seems desirable, that the selection of cases for the experiment should be made with a judicious discrimination.

In proposing the excision of carious joints, Mr. Park seems to have expected, that the contiguous bones would, in all cases become firmly joined by ossific union. Such union, it is obvious must be essential to success in the joints of the knee and ankle; but as there are no means by which a complete ankylosis can be ensured, and as the lower extremities admit

of so much better substitutes than the upper, it may be questioned whether, in the present state of our experience, the operation on the knee and ankle should generally, or even frequently be recommended.

I do not recollect that, in any of the published cases, the union of the elbow has been firm, nor perhaps is it desirable that it should be so. If the flexion of the elbow was very nearly a right angle, a firm ankylosis would be little, if any, disadvantage; but otherwise some motion will be useful, provided the muscles are not rendered inert by the want of a firm attachment.

ART. VI.—*On Uterine Hæmorrhage*. By WM. WILDSMITH, M. R. C. S., Surgeon of the Leeds Lying-in Hospital.

THE object of the following paper, is to introduce a few remarks relative to the most serious occurrences in the practice of midwifery. The details enumerated are probably known to the majority of the medical public, but a degree of inattention if not of prejudice, has hitherto prevented the universal adoption of a plan of treatment, which I am persuaded will ultimately be acknowledged as an important addition to our remedial measures. It will be necessary to premise that the present paper refers to those hæmorrhages only, which occur at the full period of utero-gestation. The subject naturally divides itself into two classes:

1st.—HÆMORRHAGE PREVIOUS TO DELIVERY.

2nd.—HÆMORRHAGE SUBSEQUENT TO DELIVERY.

The first class consists of varieties in which we find,

(a) *The placenta situated at the fundus or sides of the uterus—the hæmorrhage unperceived, and known only by symptoms indicative of sanguineous discharges in other parts of the body.* Before noticing the other varieties of this class, I must express my belief, that this cause is more frequently the precursor of death than is probably imagined. A brief notice of several cases will illustrate my meaning better than a more lengthened historic description.

CASE 1st.—A. B., the mother of several children, aged 37, was seized at 6 A. M. with slight uterine pains. The surgeon was sent for at 10 A. M. He found the patient greatly exhausted and faint, the pulse quick and feeble. The os uteri was dilated to the size of a half crown, but no protrusive effects followed the feeble pains; a cordial was exhibited, and rest enjoyed. He was again summoned at 1 P. M., but too

late, the patient had expired suddenly, after two or three rather violent pains. On examining the abdomen it was found more tumid than usual and yielded to pressure at the umbilical portion. No examination was permitted.

CASE 2nd.—The mother of eleven children; symptoms similar to the preceding. Surgeon sent for at 6 A.M. He found the patient in the midst of a rather severe pain, but it was her last—she instantly expired. He was informed that excessive sinking and coldness of the whole surface were the reasons why he had been summoned, and that she had merely suffered two severe pains before she expired. No examination permitted.

CASE 3rd.—The preceding symptoms were observed: speedy expulsion of the ovum was decided upon; a large coagulum weighing from 14 to 16 ounces immediately followed; the placenta was retained about 15 minutes, but no further hæmorrhage ensued.

CASE 4th. was furnished me by a distant friend. Symptoms as above; death in six hours from the commencement; inspection allowed; a large coagulum at the anterior portion of the fundus uteri weighing 18 ounces; the rupture of the placenta two and a half inches long, and at its lateral portion.

I have abstained from furnishing any details of the cases, on account of the delicacy connected with them.

It must be confessed that in consequence of the rarity of this form of uterine hæmorrhage, and the difficulty of obtaining consent for inspection after death, we are not enabled to judge confidently of the cause of death. To this must also be added our comparative ignorance of those varied changes which occur in the sanguineous system, giving rise to venous congestion, whether of the brain, the spinal marrow, or the important viscera of the chest. It may however be assumed without fear of erring much in our practice, that, wherever we meet with a case resembling the preceding, with great sinking, feeble and faltering pulse and coldness of the skin, without any adequate cause being assigned, that internal hæmorrhage *may* be going on and that nothing short of a quick expulsion of the foetus can arrest the fatal result so forcibly presaged in the countenance and manner of the patient. Should our conjecture prove false, no evil can possibly arise from the practice I shall explain in the following pages.

(Variety b.) *The placenta situated at a distance from the cervix uteri, but the separation of the chorion and decidua allowing an egress of the hæmorrhage, caused by a partial detachment of the Placenta.*

This is an occurrence which happens probably as often as the former, but not more so. The diagnosis happily

is comparatively clear. It can only be confounded with that Hæmorrhage which proceeds from the torn vessels of separated membranes, in which case, should the discharge be profuse, the same treatment will obviously be required. It appears to me very desirable, that an expulsion of the Ovum in this, as well as the former variety, should not admit of any unnecessary delay, as it must be feared that every hour that passes will most likely add to that debility of the muscular as well as of the sanguineous system which will prevent the due effect of any of those means that are otherwise calculated to ensure success. It would be easy to illustrate this and the following variety, with a detail of minute symptoms and a series of cases, but I am persuaded that an ordinary extent of practice must have afforded some specimens of this affection, than which, nothing can possibly be more instructive.

(VARIETY c.)—*The placenta situated near to, or over the Cervix Uteri.*

The alarming symptoms attendant on this form require more decision of conduct in the *Accoucheur* than the two former. Its nature and effects are so easily ascertained by examination, as to preclude any doubt about what plan of procedure should be adopted. It certainly will require some discrimination in the practitioner, to determine the immediate or remote necessity for promoting expulsion, in which, his judgment will be regulated by the violence or moderation of the flooding which attends the dilatation of the cervix uteri. But the principles of practice will be so far analogous to the former, as merely to require notice when discussing the treatment.

There are two grand fundamental axioms from which we may deduce every mode of treatment necessary to be pursued:

1st.—*To sustain or renovate the several functions essential to life.*

2nd.—*To produce those changes in the Uterus which shall enable it to expel its contents, and with all possible celerity.*

In elucidation of the first of these principles of practice it is to be observed, that Hæmorrhage proceeding from a highly excited circulation, will require a deviation more apparent than real. Indeed the unfrequency of such a cause, is apt to occasion it to be overlooked: and although there can be no difficulty in ascertaining this condition, nor doubt of the propriety or manner of obviating it, yet if we confide too much in the prospect of alleviating the symptoms, rather than of obviating their cause, we may do more harm than good. It is very probable that the very diseased action which is going on may supersede any necessity of interfering with this plethoric

tendency, otherwise than by withholding such stimuli as would increase vascular excitement, rather than by any positive anti-phlogistic means. In connection only with the varieties a. b. can we expect to find this to be the cause of Hæmorrhage, and if it be allowed to characterise five cases in the hundred, it is very likely that no more than one in that five will require decided and direct depletory measures to be used. It may therefore be dismissed with this proviso, that whenever it is found advisable to proceed in such a manner, it will be well to have in view the probability of excessive reduction of the circulation, by the very circumstance we are anxious to prevent, and consequently, that all our measures should be adopted and practised with the greatest caution.

Where the general system is found moderately vigorous, little or no interference is necessary; but as it has been before adverted to, that the whole of the powers of life are in a degree vitiated if not prostrated, before we are sensible of the impending danger which attends the case, our prompt attention is requisite to renovate, and indeed, sometimes, even to resuscitate the almost expiring fabric. Happily it is possible not only to afford assistance in regaining the necessary strength for the occasion, but, at the same moment, to employ such means as will carry into effect the second indication, namely the expulsion of the Ovum.

Amongst the stimulants to be employed, brandy stands foremost in the list, diluted with cold water, or any other vehicle, as the gruels, tea, &c. It is useful not only in increasing the circulation, but by its grateful flavour, in relieving that faintness and sickness which so much distress and terrify the patient. The application of heat by friction or permanently applied warmth will also be indispensable. The old Hypotheses that these measures would increase Hæmorrhage rather than restrain it, are now nearly obsolete; for it appears that by giving tone to the system, we most effectually suppress any local discharge that may be going on. Having attended to this important particular, the expulsion of the Ovum claims our notice. And how is this to be effected? Two plans offer themselves for consideration. *First, by increasing the natural efforts of the Uterus to expel its contents; and second, by facilitating the process, by turning.* Until of late years the former was almost impracticable if not altogether so, and consequently the latter was resorted to whenever it was advisable to hasten delivery, and it is still practised by many to the exclusion of all other means. It is asserted that the operation of turning is at all times practicable, safe and decisive in its result. But I contend it is not so, and appeal to the experience of those

who have frequently practised it, whether impediments do not often exist of a serious and obstinate character. For instance, the introduction of the hand is not always so facile as is sometimes asserted; for although the necessity for this operation is most frequent in those advanced in child-bearing, yet I have been surprised at the unyielding nature of the os uteri even when the placenta is situated over its opening, and profuse Hæmorrhage is proceeding. There appears an irregular contraction approaching in character and intensity the hour-glass one, and which resists for some time all endeavours to overcome it. Should the waters be evacuated, or should the head in part have descended, another formidable barrier will be presented to our procedure, and after all, should the hand lay hold of the feet and succeed in bringing them without, we can effect but little without those pains which are too often wanting, or too languid to second our endeavours at promoting expulsion; and we may rest assured, that if extraction be persisted in without a corresponding contraction of the uterus, not only will our efforts be likely to promote rather than retard the discharge, but our time will be lost or mis-spent, and aggravated distress will accrue to the patient. What then is our other resource? or how are we to increase the tone of the Uterus, or to stimulate its fibres that expulsion may be quickened? Simply, safely, and with almost invariable certainty, by giving the *Secale Cornutum*. Until the introduction of this remedy in obstetric practice, we had no dependence on any other means whatever, for providing us with this powerful desideratum. I intend not to descant upon its merits, nor to prove its safety and simplicity, nor to discuss its *probable effects*. Its advantages are recommended to me by a continued and rather extensive use of it for nearly five years, and by the testimony of many valued friends of impartial judgment, and by the recorded observation of many individuals well known by the profession. Having ascertained whether a case is of the 1st. 2nd. or 3rd. variety, and provided that nutrition which is necessary, it is proper in the first and second more especially, but also in the third form to be certain that a capacity of Pelvis exists to allow of expulsion, without any extraordinary prevention occurring. It will then be advisable to decide upon the practicability and propriety of turning. For although I have stated so many objections to the operation, yet it is merely to prevent too much dependence being rested upon it to the exclusion of other means. Suppose that the sinking of the patient is not excessive, that she is of vigorous nature, and a rigidity of the soft parts renders the admission of the hand difficult—then are we justified in relying on the Uterine powers principally, aided

by a gentle dilatation of the os uteri, or slight abdominal pressure. A dose of ergot is now to be given and repeated every five or ten minutes according to the urgency of the case or the effects of the medicine.* To those who are unacquainted with the operation of this drug, any description of mine would utterly fail in convincing them of its powers, and to those who already have witnessed it, any farther remarks would be superfluous. It is sufficient therefore to state that in from five to fifteen minutes, strong and regular pains will come on, the necessary secretions will suddenly lubricate the passage, and it is not improbable that when fifteen or twenty minutes have expired, the foetus should have made its complete and favourable exit from the uterus. In such cases, the ergot may be regarded almost as a specific.

There are probably cases in which from idiosyncrasy or from the already too exhausted powers of the general as well as of the uterine system, its effects are not what I have described; but I am persuaded that such constitutional peculiarities as resist its action are very rare, and that when debility is the cause we have but slender hopes remaining, that any other means will do much to assist our endeavours.

But should it be decided in favour of turning, after considering the excessive exhaustion, almost approaching dissolution, a violent flooding, and a condition of the powers scarcely susceptible of reaction, even in this case, the secale may be given although without that certainty of action as in the former case, yet with as much probability of success as any other internal remedy we can administer. Should it succeed it will prove our sheet anchor, for as before mentioned, without uterine contraction foetal extraction can avail but little in our favour. It will supply us with every extrinsic aid we can desire or wish for, and cannot by any chance whatever impede our extractive efforts. My practice has afforded me examples of every variety which I have detailed, but in the latter more particularly I have several times experienced every good effect I have described, and am therefore warranted in asserting that its use is calculated to dispel all that doubt and uncertainty, with regard to

* The dose may vary from a scruple to two scruples and even to a drachm of the powder in cases of extreme urgency; for merely exciting a regular order of pains a scruple to half a drachm is quite enough; but if this be increased the effect is not only more sudden but powerful also. My plan is to infuse it for five minutes in boiling water, and then to pour it off adding sugar and cream, which renders it as palatable as common tea. It may however be given in cold water or in form of tincture. Should griping pains of the bowels follow or attend its operation, Tinc. Opii will be found effectually to relieve. Care should be taken that the article be good in quality.

success in cases of this description which have so much embittered the practice of the *Accoucheur*.

I have refrained from mentioning several adjuvants generally and very properly insisted upon; but I was fearful that by alluding to these I should somewhat abstract from the merits of the principal remedy, or I should have alluded to posture and to rest necessary in the two first varieties at their earlier stages, and to the great advantage to be derived in the third variety by the use of a firm compress applied to the open orifices of the placental vessels, until further means are resorted to. These are fully explained in all the excellent systems of midwifery-practice extant, and to which I refer.

The second class of Hæmorrhages of the Uterus, is that which occurs subsequently to the expulsion of the Fœtus; and of these we notice two principal varieties.

(A) *previous to the detachment of the placenta.*

(B) *after the expulsion of the placenta.*

It may be supposed that the former is frequently caused by the pain or pains necessary for the birth of the child, but which being inordinate, the contraction is so complete as to detach a portion of the placenta and thereby to occasion hæmorrhage. However though of frequent occurrence it is but of trivial importance, as the total separation, whether natural or artificial, will correct the evil. Truth obliges me to state, that I have noticed this to happen when the *secale cornutum* has been given, and its valuable aid experienced in the speedy expulsion of the child: and as this accident is probably not more frequent than once in fifty or a hundred times, and as we have the remedy so decidedly in our power, it ought scarcely to be considered in our general practice as worthy of more than a passing notice. Should the contractions cease before the separation of the placenta is complete, it will be requisite to adopt the usual methods resorted to where the placenta is retained without hæmorrhage. By grasping the Uterus firmly for a time, any further discharge will be checked, and should the Secundines retain possession it will be necessary to bring them away before leaving the patient.

It is, however, more frequently found to arise from a torpor of the uterus, consequent on a too sudden expulsion of the whole child, probably by a single powerful pain. Indeed, so generally have I observed this to follow, in cases where timely assistance was wanting, that I am more than usually attentive to the patient until the secundines are evacuated and the contraction completed. Our way in this matter, whatever may be the proximate cause is very clear: should any impediment prevent the operation of extraction, we may safely exhibit the

ergot, and use compression of the uterus, until pains come on. These measures are equally efficacious for the purpose desired at this period, as in the earlier stages of labour, unless a morbid adhesion of the placenta to the uterus exists. I do not recollect that amongst a number of cases of the hour-glass retention or of morbid adhesion, that have occurred to me, that I have found hæmorrhage to come on in any instance, although both states have often been attended by a partial detachment of the placenta.

In the next variety, where the uterus is freed from all its contents, we find very often a disposition to excessive flooding. In some classes where debility is present, whether from excessive indulgence, or from impoverished diet, or after frequent child-births, the contractile power of the uterus is diminished, and danger often ensues. Indeed, so confident do I feel of its frequency, that were I not almost invariably to use compression of the uterus after the birth of the child, I should discover a very copious discharge following the placenta; but by using pressure, a slight quantity of blood gurgling with a portion of air rushes out, and the tone of the uterus being somewhat strengthened by the process, prevents further effusion. It is not possible to conceive of a more effectual remedy in this variety, than the mere grasping of the uterus, for a length of time, proportioned to the urgency of the case: we thereby effectually prevent any enlargement of its capacity, and completely plug up the orifices of the vessels by the close contact of the surfaces of the uterus. In order to render success doubly certain, I frequently give a dose of ergot where it is either expected from previous similar accidents, or where I find the probability of a recurrence when pressure is withdrawn. The effect has always been to produce a succession of slight pains, more permanently contracting the uterine fibres, and thereby lessening the duration and severity of after-pains, in addition to the other benefit conferred.

My invariable rule is to ascertain whether the patient has been the victim of prior floodings, and if so, to give without waiting for the actual occurrence, a full dose of the secale, and the prevention in every case has been very complete. To be able to assure our patient, who feels so warrantable a fear and dread of her forthcoming delivery, that it may end her life, that we can administer a preventive, is a circumstance that none but those immediately concerned with it can sufficiently estimate. And this I may confidently affirm we are enabled to do, without the charge of empiricism or the chance of failure. I have myself witnessed many cases where after

successive births an alarming flooding has supervened, which appeared to have done all but extinguish animation; and I have heard from many friends who can testify with me to the same effect, that by the administration of a single dose of secale all excessive hæmorrhage has been prevented and danger completely averted. If such then be the fact, why should we not abandon all minor remedies and trust primarily and fully to this one. The advantages are unquestionable, and what is the mischief or danger to be apprehended I have yet to learn. Have we not ever been accustomed to give stimuli of every class, and especially those of a spirituous kind, to promote the pains of labour, at the risk of being followed by inflammation or fever? and may we not resort to an article of the *materia medica* which has already undergone a most rigid scrutiny as to its effects, and whose botanical character is unallied to any thing deleterious? We should indeed hail it as one of those special and divine blessings, given to us to assuage some of the ills that flesh is heir to, in an equal degree that we esteem mercury as an antidote to lues, and vaccination to the small pox; and consequently that should we neglect or despise its aid where necessity appears to require it, the guilt of having protracted the sufferings of our species, (and hazarded their lives) will most assuredly attach to our professional conduct.

ART. VII.—*Further Experiments concerning Suspended Animation. On the supposed effects of the circulation of venous blood in the brain when respiration is suspended.*
By JAMES PHILLIPS KAY, M. D. Physician to the Ardwick and Ancoats Dispensary, Manchester.

THE organs of the body consist of almost infinitely numerous capillary vessels. Cuvier* considers vascularity to be essential to organization, and the circulation or imbibition of a nutritious fluid to the maintenance of life. In the higher orders of animals the tissues are generally nourished by arterial blood of a florid red hue. In those animals which produce less heat, less perfectly arterialized blood is often circulated, and they are capable of existing (at periods when their faculty of generating heat is least,)† for a considerable time, in a state of torpidity, whilst the respiratory function and circula-

* Leçons d'Anatomie Comparée.

† Edwards, sur l'action des agens sur la Vie.

tion are almost suspended. From arterial blood, however, in the first grades of the animal series, the different secretions are, by various vascular actions, eliminated, the organs are nourished, and the functions supported.

After the blood has contributed to the production of these effects, it is poured into the veins, where it is discovered that it has undergone great changes, of which the chief evidence exists in the remarkable alteration of its colour. The vivid scarlet hue of the arterial blood is succeeded by the dull dark chocolate colour of the venous fluid. Physiologists, from the earliest periods have conceived, that, in this state, it is no longer capable of supporting the functions of the human organization. Goodwyn supposed that it paralysed the heart by mere contact with the internal surface of its parietes, and Bichat† imagined that he had demonstrated that it possessed positively noxious qualities, and that it extinguished the organic motions and life as soon as it was propelled into the structures of the body.

When the access of atmospheric air to the lung is in any way suddenly prevented, about a minute elapses, during which, the animal exhibits no external evidence of distress: it then makes an attempt to inspire, resembling a deep sigh, which is necessarily ineffectual. This is followed by rapid gasping, by which the whole body is agitated, and every muscle which has power in respiration is most violently contracted to overcome the obstacle to the admission of air. The limbs quiver, writhe, or are fixed in tetanic spasm. The surface and mucous membranes become livid, the sensorial faculties are abolished, and the action of the voluntary muscles ceases. The circulation and the action of the heart continue for a short period only. On more minute examination the whole capillary system is found to contain only dark fluid blood; the left auricle a considerable quantity; the left ventricle scarcely more than is sufficient to moisten its parietes; the arteries are empty, but the venous system, especially where it empties itself into the right heart is gorged. The right ventricle and auricle and pulmonary artery are distended to the utmost, with a dark fluid blood. If asphyxia have been produced gradually, the colour of the blood is darker, and the engorgement of the lung more perfect, and this always differs in proportion to the length of time which elapses ere death occurs; but the left ventricle and arteries are invariably empty.

* On Suspended Respiration.

† Sur la vie et la Mort.

On this subject the opinion of Haller,¹ Kite,² Coleman,³ Bichat,⁴ Orfila,⁵ agree in the general fact, differing somewhat concerning some of its features.

The analysis and explanation of the phenomena of this mode of death have occasioned the most vehement controversies, from the earliest periods of the history of Medical science, and the most distinguished of its professors have illustrated the subject by their names. Death, thus produced, has been attributed to apoplexy from congestion of the brain, and asphyxia is even placed in the genus apoplexia of Cullen. But Valsalva Morgagni,⁷—De Haen,⁸—Coleman,⁹—Bichat,¹⁰—Monro,¹¹—and Kellie,¹² have examined the appearances exhibited by the brain in cases of asphyxia from submersion and hanging, and have never observed any signs of congestion.

Harvey¹³ and Haller,¹⁴ in whose day the connexion of chemical laws with animal physiology was little understood, conceived that asphyxia was produced by an interruption in the circulation, owing to a mechanical impediment occurring in the lungs during expiration, from the compression of their vessels. Goodwyn,¹⁵ however, proved, that after expiration the air remaining in the air vessels of the lungs distends them sufficiently to permit the blood to circulate freely through them.

John Hunter,¹⁶ opposed on good grounds,¹⁷ as we shall perceive, the theory of Bichat, but asserts that cessation of the heart's action depends "upon the sympathetic connexion between the heart and lungs: one action" he says, "ceasing, the other ceases: which sympathy is established, because, if the heart were to continue acting, it would send improper blood into the body, by which it can be supported only a little while." We need scarcely observe that attempts to explain events by reference to their final causes, as in this example furnished even by the sagacious Hunter, fail, if those which are immediate and proximate are neglected.

¹ *Elementa Physiologiæ*, vol. iii., p. 249. ² *On Suspended Animation*, p. 56. ³ *On Suspended Respiration*, p. 6 and 7. ⁴ *Sur la Vie et la Mort*, p. 229. ⁵ *Dictionnaire de Médecine*. Asphyxie. Tome iii. p. 60. ⁶ *De Sedi-bus et Causis Morborum*. Epist. xix. ⁷ *De Submersis Caput II. Ratio medendi*. Tome viii. part ii. and *de resuscitanda vitæ suffocātorum, suspensorum, &c.* Caput ii. *Ratio medendi*. Tome ix. ⁸ *De Submersis Caput II. Ratio medendi*. Tome ix. ⁹ Coleman on Natural and Suspended Respiration. ¹⁰ *Sur la Vie et la Mort*. ¹¹ Dr. Kellie's Paper on Death from Cold. *Ed. Med. Chir. Society's Trans.* p. 131. ¹² Dr. Kellie. *Ibid.* ¹³ *Exercit. Anat. De motu Cord. et Sang. Circul.* 18mo. p. 157. ¹⁴ *Elementa Physiologiæ*. Vol. iii. p. 250. ¹⁵ *Experimental Inquiry into the effects of Submersion, &c.* p. 46, 47. ¹⁶ *On the blood*. p. 54. ¹⁷ *On the Animal Œconomy*.

At the commencement of this century, these various hypotheses appear to have merged in the two prevailing and antagonizing theories of Goodwyn and Bichat.

Bichat maintained that when the access of atmospheric air to the lung was prevented, the blood which permeated its structure, became gradually of a darker hue, and at the expiration of a minute and a half or two minutes resembled venous blood. This fluid he contended, was propelled by the heart into its own tissue, and into that of all other organs, and immediately destroyed life by its contact with their ultimate fibres. Thus he conceived that the functions of the heart, muscles, brain, spinal cord, nerves, and secretory organs perished, because venous blood had penetrated them.

Some years ago I attempted to investigate this subject, and the results of an experimental inquiry which I then instituted, published in the *Edinburgh Medical and Surgical Journal*.

From the facts adduced in that essay it appeared, that when the entrance of atmospheric air into the lungs is prevented, the blood continues to permeate them for a very short time only, or one which may be considered commensurate with that which is necessary to deprive the air contained in the cells of all its oxygen. The blood then ceases to be arterialized, and its progress through the pulmonary structure is arrested.* The minute vessels of all tissues have peculiar sensibilities of organization, and it appeared contrary to the hypothesis of Bichat, that the vessels of arterial blood in the lungs, are incapable of conveying blood in advanced stages of that venous degeneration, which ensues when the access of atmospheric air to the cells of the pulmonary structure is precluded. The blood, however, permeates the tissue with a progressively and a rapidly diminishing velocity, in small quantities, and for a very limited period, until it becomes at length so much changed, as to be incapable of exciting the action of the vessels of arterial blood, and the circulation is arrested in the lungs. In three experiments which were frequently repeated, it was shewn, that the blood entirely ceases to be transmitted from the lungs

* In justice to my friend Dr. Williams, of Liverpool, I must remark, that he has drawn my attention to an able paper which he had previously communicated to the *Edinburgh Medical and Surgical Journal*, which anticipates one of the conclusions at which I arrived, by a very different experimental process. His paper is entitled "On the Cause and Effects of an Obstruction of the Blood in the Lungs." His conclusions, concerning this particular portion of the inquiry, are expressed in these words. "The obstruction of the blood in the lungs, on suspension of respiration, is not the effect of a mechanical cause." "The obstruction of the blood in the lungs, on suspension of respiration, arises from a deprivation of pure atmospheric air."

to the left cavities of the heart, in little more than three minutes and a half, after the air is excluded. Respiration is therefore necessary to the transmission of the blood through the pulmonary tissue, and when the inhalation of atmospheric air ceases, it is followed by an arrest of the circulation, in the capillary vessels of the lungs. If air be immediately re-admitted into the pulmonary vesicles, or insufflation be, after the lapse of a short period performed, as in the celebrated experiment of Hooke, the blood undergoes changes in the vessels—carbonic acid gas is given off—it contains more oxygen, and less carbon proportionally than before, assumes the arterial hue—again penetrates the pulmonary structure, and is propelled by the left ventricle into the arteries. Hunter* sagaciously observes that this fact is subversive of the theory of Bichat; it is equally so of that of Goodwyn, who supposed that the circulation is arrested in asphyxia, because the dark blood, having permeated the lungs, destroys the contractile power of the left auricle by its presence in its cavity. This last hypothesis is however incompatible with the simplest and most obvious experiments, and in the essay to which I referred it was demonstrated, that the presence of the dark blood in the cavities of the heart maintains their contractility, by occasioning venous congestion in their structure.

Bichat, however, observing that the circulation continues for a period, and reasoning thence, that venous blood must permeate all the tissues of the body, conceived that the functions of the various organs were destroyed by the positively noxious qualities of the blood circulated in their vessels. He attempted to prove, by direct experiment, that it produced this effect on muscular and nervous fibre. I discovered, on the contrary, when the artery supplying the muscles had been tied, and the contractile power had been, in consequence, after the lapse of some time totally extinguished, as in the experiments of Boerhaave, Stenon, Cowper, Legallois, Etchepare, &c., that, on the injection of venous blood, the power of contraction revived—that in the absence of arterial supply it was maintained by venous congestion in the tissue, and that the irritability of the heart in asphyxia is supported for a time, by the congestion of the venous blood in its cavities and veins. The right auricle, which is regarded by physiologists as the ultimum moriens, retains its contractile power, because its tissue is in the greatest degree congested with venous blood, (and perhaps because its cavity

* On the Animal Economy.

is longer supplied with its natural stimulant)* and it appeared that the order in which irritability deserts the various cavities of the heart, might be reversed, by maintaining the congestion of those which are ordinarily empty, and evacuating those which are generally full of venous blood.

The general conclusions concerning asphyxia obtained from this investigation were, first, that the circulation is arrested after respiration ceases, because, from the exclusion of oxygen, and the consequent non-arterialization of the blood, the minute pulmonary vessels which usually convey arterial, are then incapable of conveying venous blood, which therefore stagnates in the lungs. Secondly, that the arrest of the circulation is sudden when the lungs are entirely deprived of air, and that blood ceases to flow from them into the left cavities of the heart, even in the smallest quantities, in about three minutes and a half. Thirdly, that even supposing a great quantity of venous blood were transmitted through the lungs, and permeated the heart and muscles, it would not impair their contractility: but on the contrary, that it is even capable of supporting this power for a certain period. Venous blood does not possess any noxious quality, by which the organic functions of these tissues can be destroyed, but is simply a less nutritious and stimulating fluid than arterial blood. The functions of muscular fibre cease in asphyxia, because the circulation, (and consequently that supply of vital fluid which is necessary to life) is arrested in the lungs.

At the period when these experiments were published, I was interrupted in the pursuit of the investigation. It still remained to be proved in what quantities venous blood permeated the lungs in asphyxia, and whether as appeared in the experiments of Bichat, this fluid destroys the functions of the brain and nervous system. This inquiry appeared to be of great importance, since these still continued to be the opinions of all modern physiologists. Beclard† thus says, “Asphyxia, whose cause has been so much sought in the obstruction of the transit of the blood through the lungs—(Haller) in the stagnation of the venous blood in the left ventricle—(Goodwyn) in the penetration of the muscular structures of the heart by this blood—(Bichat) results much rather from the transfusion of the nervous structure by dark blood.” and Dr. Alison, in his recent admirable work on Physiology, admits the doctrines advocated in the paper which I published, but he

* Haller, *Elementa Physiologiæ*.

† *Elemens d' Anatomie Générale*. p. 644.

says, that **“the experiments of Bichat, Brodie, and others have satisfactorily shewn, that a quantity of blood sent from the right side of the heart to the lungs, although not arterialized there, passes on to the left side of the heart, and is propelled into the arteries; and that as soon as this venous blood reaches the brain, the animal becomes insensible, and generally convulsed.†* “It appears,” he repeats “from these facts, that in death by asphyxia, the deleterious influence of venous blood is exerted first on the nervous system; next, and most fatally on the circulation in the capillaries of the lungs, and in a less degree only, on the heart and other muscular parts.”

I consider it therefore important to ascertain the truth or fallacy of these opinions.

When respiration is arrested, the lungs still contain a considerable volume of air, which continues to impart its oxygen to the blood, until it is consumed. M. Berger, of Geneva,‡ collected and analysed a portion of this air when expelled from the lungs, a short time after immersion, in a great variety of different animals, and uniformly found that it had lost nearly the whole of its oxygen. As long therefore as the blood obtains oxygen from the air cells, it continues to circulate through the lungs, and in the first moments it may be considered almost duly arterialized, and then permeates the pulmonary structure with undiminished velocity. The obstacle to the circulation ensues in consequence of the cessation of the change from venous to arterial blood, and is proportioned to the degree in which the blood, contained in the capillary arteries of the lungs, assumes the venous character. Bichat, however, asserts that if respiration be interrupted immediately after an inspiration, the colour of the blood issuing from an artery, or observed in the pulmonary veins is obscured in thirty seconds—becomes decidedly dark in a minute, and exactly resembles venous blood in a minute and a half or two minutes. This change he affirms is more rapid, if respiration be arrested, immediately after an expiration. Venous blood, he affirms, permeates the lungs, and is propelled into all the structures of the body, during a period, and in quantities sufficient to arrest their organic motions by its presence. Having discovered that the former part of this theory was defective, I was led, by the want of precision and congruity in the experiments of

* Alison's *Outlines of Physiology*, p. 194.

† *Essai physiologique sur la cause de l'asphyxie par submersion*. (1803)

‡ *Sur la Vie et la Mort* p. 241.

the celebrated French physiologist, to examine these opinions. For this purpose, I performed the following experiments. As a preliminary measure I ascertained, that in a rabbit of about the ordinary size, about seven drachms and three quarters of blood would escape from the divided aorta, when respiration was unobstructed.

EXP. I.—A rabbit (six or eight months old) was secured, and a ligature was passed under the trachea. The abdominal aorta was laid bare in the centre of the abdomen, separated from its vein, and then tied. I placed my watch beside me, and observing the minute hand, I tied the trachea so as to prevent the admission of air into the lungs. At the end of twenty five seconds, I divided the aorta immediately above the ligature. Arterial blood of a somewhat duller hue than usual issued, and seven drachms were collected in a graduated drachm glass. In this experiment the lungs still contained a considerable quantity of oxygen—the blood permeated them almost duly arterialized—and the quantity which issued from the divided aorta, almost equalled what would have escaped, if the free access of air to the lungs had been permitted.

EXP. II.—A rabbit of the same age was secured. The abdominal aorta having been laid bare and tied, a ligature was placed beneath the trachea. Observing my watch as before, I tied the trachea, and when a minute and a half had elapsed, divided the aorta immediately above the ligature. The blood which issued had a slightly venous hue, it retained still much of the arterial character. Fully five drachms were collected in the graduated glass.

In this experiment, the oxygen contained in the lungs was evidently not yet exhausted, and the blood which permeated them, still received a considerable quantity, and in consequence, underwent a change of colour, though it did not assume the perfect arterial redness. The difficulty of permeating the pulmonary tissue had, however, commenced, and four drachms of blood, somewhat changed in character, issued.

EXP. III.—A full grown, strong, and healthy rabbit was secured. The same arrangements were made as in the preceding experiments, and observing the time, I tied the trachea. After a minute and three quarters had elapsed the aorta was divided in the abdomen. The blood which issued was of a duller hue than that collected in the last experiment, but was brighter than venous blood. Four drachms and a half were collected in the graduated glass.

This rabbit was much larger than either of the former. The blood collected was therefore less in proportion to the size of the animal than in the last, shewing a progressive diminution in quantity, as the time of dividing the artery was postponed. The lungs evidently still contained oxygen, and the blood therefore permeated them with considerable freedom, though in smaller quantity than before.

EXP. IV.—Finding that the blood had not lost all its arterial character, at the termination of a minute and three quarters, I postponed

the period of dividing the artery to the termination of two minutes and a half. The blood which issued from the divided aorta was darker, but still differed from venous blood. Four drachms were collected.

EXP. V.—The experiment was repeated in all its circumstances as before, excepting that the period of dividing the aorta was postponed to the expiration of the third minute. The blood then appeared in a great degree to have assumed the venous hue, though, as far as I was able to judge, still imperfectly. Only two drachms issued from the divided artery. As we may, however, be liable to mistakes in estimating by the eye only the degree of change which ensues, it may be proper to consider this last portion as venous blood.

These experiments were frequently repeated. Owing to various circumstances, such as the age of the animal, its size, the relative capacity of the chest, the degree of its expansion at the moment when air was excluded, &c. &c. the results vary, but the experiments given above may be taken as a fair representation of the mean of these varieties.

When three minutes and a half have elapsed after tying the trachea, the blood generally ceases to flow from the divided artery. These experiments therefore prove that when the inhalation of air is prevented, the blood circulating through the lungs gradually loses its arterial redness, and, as its colour graduates sensibly through various shades of venous degeneration, its progress is impeded, it permeates the tissue more slowly, and in smaller quantities, and when the oxygen is consumed the pulmonary circulation is arrested. The moment before the left auricle and ventricle cease to receive blood, it is poured into them in small quantities, and as the peculiar function of the arteries of the lungs is, to circulate arterial blood only, we are led *a priori* to suppose, that their organic sensibility will be first impressed by any change in the character of that fluid, and that therefore they will not permit venous blood to be transmitted through them, in such quantities as to prove positively deleterious to the function of any tissue.

Nevertheless, we consider it important to examine the facts and arguments from which Bichat concludes that in asphyxia, venous blood permeates the cerebral structure in stages of its venous degeneration, and in quantities which destroy the functions of the brain. His first experiment is thus detailed.*

“ I opened, in an animal, the carotid and jugular; I received into a syringe, heated to the temperature of the body, the fluid that the latter poured forth, and I injected it to the brain by the former, which I had tied on the side nearest to the heart,

to avoid hæmorrhage. Almost immediately, the animal became agitated; his respiration hurried, he appeared to suffer from dyspnœa similar to that which occurs in asphyxia: he soon exhibited all its symptoms; animal life was entirely suspended, the *heart continued still to beat, and the circulation to proceed during half an hour*, at the termination of which, death extinguished also the organic life. The dog was of a middle size, and about six ounces of dark blood were gently injected, lest the effect which resulted from the nature of the fluid, should be attributed to a mechanical shock." This experiment is liable to many objections.

To maintain the integrity of the cerebral functions a normal relation between the contents of the arterial and venous capillaries is required. The brain is contained in an osseous case, which it exactly fills. The openings into this cavity are closed by the medulla oblongata, the vessels, nerves, and intercellular tissue so exactly, as to render it impossible to introduce additional fluid into the structure without a compression of the whole mass. The force which is exerted by the heart whether in health or disease, is however incapable of producing such an effect. Causes increasing the impulse of the arterial or impeding the return of the venous blood do not produce apoplexy by occasioning a compression of the whole mass of the brain.*

When the impulsive power is too great the caliber of the arterial capillaries is increased at the expense of the minute venous system, which suffers a relative diminution of capacity. The effects are reversed when apoplexy is occasioned by obstructions impeding the return of the venous blood. In both cases the quantity of blood circulating through the cerebral mass in a given time, (and therefore the supply of stimulus and nourishment,) is diminished, and apoplexy ensues. Since the integrity of the cerebral functions requires so delicate a balance between the arterial and venous capillary circulation, the brainular mass cannot be rudely interfered with by the injection of fluid. The force of the arm of a man is applied continuously, and not with the pulsatory motion of the heart, and though the greatest caution be observed in avoiding violence, a slight increase of power, or deviation from the method by which arterial blood is propelled by the heart into the tissue, will produce apoplexy.

In this experiment, it is worthy also of observation, that though six ounces of venous blood were injected into the brain, life was not extinguished until half an hour had expired. The

* Abercrombie Pathology of the Brain and Spinal Cord.—Kellie on Death from Cold.—Edinburgh Medico-chirurg. Society's Trans.—P. 100, Vol. I.

animal existed in a state resembling apoplexy. Had the experiment *even proved the noxious influence of venous blood on the cerebral structure*, it by no means demonstrates that this fluid occasions the interruption of the cerebral functions in asphyxia, since the blood then circulated, though *darker than arterial is not so dark as the venous fluid*, because *six ounces of venous blood* were in this case, injected with the brain in a continuous stream, and the effects even then were not immediate.*

The next experiment of Bichat is related as follows: "Divide in a dog the trachea, and close it so that no air can enter; at the expiration of two minutes dark blood flows into the system of red blood. If you then open the carotid, and receive into a syringe the blood which issues from the opening, in order to propel it into the brain of another animal, this last soon falls with an embarrassed respiration, sometimes with plaintive cries, and soon dies."

The blood which would escape from the divided artery in this experiment would differ in some degree from venous blood, having somewhat more of the arterial character. In the last moments only during which the blood flowed would it assume the perfectly venous hue. These two experiments antagonize each other; the same effects are said to be produced by blood which is, as we have shewn, in different states of arterialization, and are referred in both to the absence of the arterial qualities; the only circumstance common to both, capable of producing the effects, is the manner of introducing the fluid into the system.

Dissatisfied therefore with this evidence, I determined to examine the question experimentally. In order to avoid the effects of mechanical force, on the delicate organization of the brain, I used a very small syringe, having a beak with a capillary bore. I chose a small animal, in which the carotid artery was minute in comparison with the size of the capillary vessels of the brain, and I used the utmost caution to avoid the effects of pressure, in dilating the arterial vessels of the brainular mass.

Exp. I.—Two small rabbits, five months old, were secured. The carotid artery of one was laid bare—the pneumogastric, the descendens noni, and the sympathetic nerves were detached from it. It was secured, somewhat higher up, by a pair of forceps, held by an assistant, and was then divided. The delicate capillary loose beak of a small syringe was introduced into it, and secured, and about a drachm and a half of arterial blood were allowed to escape, when it was

again stopped by compressing the artery with the forceps. The Vena Cava of the other rabbit was displayed in the centre of the abdomen:—it was separated from the aorta and divided. The venous blood which issued into the warm cavity of the peritoneum was drawn into the syringe, the forceps were removed from the carotid artery, and when the loose beak was observed to be full of arterial blood, the syringe was inserted into it, and its contents were gradually and gently injected through the carotid artery towards the brain. This was repeated several times, until about three drachms and a half of venous blood had been thus introduced.

The animal exhibited no sign of uneasiness whatever, but appeared perfectly well.

The aorta of the other rabbit was divided, and the whole quantity of blood which issued from the aorta and vena cava, including that injected into the carotid of the second rabbit, amounted to seven drachms and a half; so that nearly half the quantity of blood which escaped, from this free division of the main trunks of the circulating system, was, in this experiment, injected towards the brain. I avoided producing any great plethora, by allowing nearly two drachms of blood to escape from the carotid, and observed great care in preventing any air from being impelled into the artery.

The rabbit, after the experiment, seemed very languid, and suffered much muscular weakness, but gradually recovered in the course of the day. The next day it was quite vigorous and vivacious.

EXP. II.—Two rabbits, nearly full-grown, and in good health were secured. The carotid artery was laid bare in one, and the beak of the syringe inserted, as in the former experiment:—the artery was divided,—a drachm and a half of arterial blood were allowed to escape, and the artery was again secured by an assistant, with the forceps. Venous blood was obtained, from the division of the abdominal cava of the other rabbit, and fully four drachms of it were injected towards the brain, into the carotid artery of the first. When more than three drachms had been injected, the animal exhibited no signs of suffering, but in filling the syringe again with fresh venous fluid, I discovered that some obstacle resisted the propulsion of the blood into the artery, and probably some coagula had collected in the capillary beak of the syringe. In the rapidity of action required by the nature of the experiment, I was tempted to use considerable force to overcome the resistance, the clots suddenly yielded to the pressure, and the blood entered with much greater velocity and impulse than before. The animal immediately struggled, and its limbs quivered. The nervous system seemed to suffer from the increased pressure, on the arterial capillaries. I thought for a moment that it would die. It recovered; but after the experiment, was weaker and less inclined to move than that on which the first experiment was performed. It remained very languid and feeble during the whole of the following day; it then appeared to recover, it took food and moved about with more freedom. On the following day it exhibited signs of some important lesion of the brain. It was subject

on attempting to move, to an apparently involuntary circular motion towards the right side, as in the experiments of Majendie, Flourens, Serres, &c. Still it seemed likely to recover for some time, but afterwards it became weaker, languid, and inert, and died at the end of ten days.

I felt persuaded that I had ruptured or seriously injured some part of the brain. I therefore removed the superior portion of the cranium. The anterior and middle lobes of the left hemisphere of the cerebrum were of a pale greenish yellow colour externally, and softer than usual, and on cutting into them, I discovered that a large abscess full of purulent matter occupied them; all the symptoms of disease, and the death of the animal were thus explained. The venous blood, though injected in very large quantities, did not destroy life, though its effects were complicated with a serious lesion of the cerebral structure, which ultimately terminated fatally.

Exp. III.—This experiment was repeated in all respects as before. When the vena cava was divided, the blood flowed very slowly, and some time elapsed before a sufficient quantity could be obtained to fill the syringe. After one syringe full had been injected into the carotid, on attempting to introduce a second, the blood began to coagulate in the beak, and when one drachm and a quarter had passed, it was impossible to proceed without using considerable force, and driving the coagula into the brain. The animal suffered little from the experiment.

Exp. IV.—This experiment was repeated in all respects as before on two rabbits. Four drachms of venous blood were introduced into the carotid artery. No signs of uneasiness were exhibited by the animal:—it remained weak and languid for some hours after the experiment, and then recovered.

These experiments exhibit the difficulty of avoiding undue pressure on the brain in injecting fluid by the carotid artery, and the danger of driving coagula into the cerebrum together with the injected fluid. They prove also, that though venous is a much less nutritious and stimulating fluid than arterial blood, it may circulate through the cerebral mass without producing, by its *contact* with the brain, a sudden suspension of the functions of the nervous system.

I conceive that it must be regarded, as a fluid capable of only slightly nourishing and stimulating the nervous system. Its presence in the vessels of the brain, even for a short time, occasions languor and feebleness, and if its circulation were prolonged, we may imagine that sensation and voluntary motion would become still further impaired, but it does not destroy life by contact with the brain, and in asphyxia, small quantities of it are transmitted, and for a short period only, to the cerebral structure.

Evidence against the positively noxious qualities of that por-

tion of blood transmitted to the brain in asphyxia, might however be obtained from some of Bichat's experiments, and we shall therefore proceed with our analysis of his inquiry. After the last of his experiments which we examined, viz. that of injecting the blood which flows from a divided artery, in an animal, two minutes after its trachea has been tied, he adds.

"I have performed an experiment resembling this last, which however gives a somewhat different result. It requires two dogs, and consists, 1st.—In inserting a stop cock into the trachea of the first, and the extremity of a silver tube into its carotid. 2ndly.—In introducing the other extremity of this tube into the carotid of the second, on the side nearest the brain. 3rdly.—In tying those portions of each artery into which the tube is not inserted in order to avoid hæmorrhage. 4thly.—In allowing the heart of *one of these dogs* to propel red blood into the brain of the other. And 5thly.—In shutting the stop-cock, and thus making dark blood succeed to that which flowed before."

Now we have before shewn, that only a small quantity of venous blood would, in this experiment, be propelled into the brain, but chiefly blood less perfectly arterialized than usual. It must also be observed, that besides all the blood which issued after the stop-cock was closed, an indefinite quantity of arterial blood was allowed to pass into the brain, and plethora must certainly have been produced.

The history of the consequences is exactly what might have been anticipated.

"After some time had expired, the dog which received the fluid appeared confused, (*étourdi*) agitated, its head declined, it appeared to lose the use of its external senses &c. ; but these phenomena were *longer in being developed* than when dark blood taken from the venous or arterial system was injected. If the transfusion be arrested, the animal may *revive and even live after the symptoms of asphyxia are dissipated*, whilst on the other hand, death *invariably ensues* when the syringe is employed to propel the same fluid, be the degree of force employed what it may."

"I may observe," he also remarks, "that for the success of this experiment it is necessary that the dog whose carotid propels the blood, should be *vigorous and even larger than the other*, because the impulsion is diminished when the heart becomes penetrated with venous blood."

Eight or ten ounces of blood, at least would be transmitted to the brain in this experiment: its results therefore resemble those which follow too large an injection of blood into the veins of animals. Speaking of an animal on whom transfusion of blood

was performed (even though it was nourished by this method only,) to the extent of eight or ten ounces—

Dr. Blundell says* “the pulse became irregular and intermitted frequently; there was languor, general tremor, and sometimes, but not invariably, a disposition to sleep.”

It is also to be remarked, that the effect described in the experiment of Bichat did not ensue *until after some time*, or until plethora was produced, and that it was necessary for this effect that the dog from whose heart the fluid was propelled should be vigorous and larger than the other, and moreover that the animal *soon recovered and lived*; that is when its system had accommodated itself to the great quantity of blood which it contained.

When these circumstances are considered, in combination with the *great abstraction* made from the quantity of the *natural stimulus* usually transmitted to the nervous system, and the substitution of a fluid capable of sustaining its action *only for a limited period*, the effects are such as might have been anticipated; they do not, however, give any evidence of the existence of *noxious* qualities in the venous blood.

Another experiment which he relates, is strongly confirmatory of the views which we have taken of asphyxia. “Whilst asphyxia is in its first stage in an animal, I have observed that by transfusing towards the brain red blood, by means of a tube adapted to the carotid of another animal and to its own, motion gradually revives, the cerebral functions are in some degree re-excited, and even often sudden agitations of the head, the eyes, &c., announce the first contact of the blood; but these good symptoms *soon disappear, and the animal relapses if the cause of the asphyxia continue, if, for example, the stop-cock fixed in the trachea remain closed.*”

The supply of blood from the heart to the brain being, as we have shewn, speedily interrupted in asphyxia, nothing can so immediately revive the sensorial functions of the animal, as the transfusion of arterial blood from the carotid artery of another animal towards the cerebral mass. But if dark blood *extinguished* the functions of the brain by its poisonous qualities, we cannot conceive that its expulsion from the tissue could be so rapidly completed as to permit the sudden re-animation which occurs in the experiment.

If however we conceive dark blood to be only a fluid *exceedingly less capable of nourishing and stimulating the nervous system* than arterial blood, we may discover how, when it has circulated through the brain, the propulsion of a more nutriti-

* Blundell's Physiological and Pathological Researches P. 77.

ous and stimulating fluid into the tissue, may revive the phenomena of life.

After apoplexy has been produced by the forcible injection of venous blood by a syringe, this result does not ensue. Apoplexy cannot be relieved, but would rather be confirmed by this measure. We discover therefore that Bichat adds "that the experiment does not succeed after the injection, of venous blood by a syringe. Then" he says, "though the cause of asphyxia has ceased to operate after the injection, although arterial blood be propelled by the same opening, whether by transfusing it from the artery of another animal, or by injecting, after having taken it from an open artery and filled a syringe with it, the animal exhibits only feeble signs of sensibility; often none are discernible, and death is always inevitable." We regard this admission as demonstrating that the death which ensues when venous blood is injected towards the brain, is not occasioned by the noxious qualities of that blood, but chiefly by the force used in the injection, combined with the great abstraction of the natural stimulus.

When respiration is suddenly arrested, the first symptoms of disturbance of the cerebral faculties ensue as soon as the quantity of fluid circulating is decidedly diminished, and motion and sensation are at an end before the circulation ceases. These effects we conceive to be owing to two circumstances: first, the *quantity* of blood circulating in the arteries is exceedingly *diminished*, and secondly, that fluid has lost, in a great degree, its arterial character, and has therefore become *less capable of maintaining the perfect phenomena of life, and especially the organic motions of the nervous system*.

The symptoms of cerebral disturbance are coincident with the progress of the changes which ensue in the colour of the blood, because those changes gradually occasion *the interruption of its passage through the lungs*; and because, at the same time a *less nutritious fluid circulates in the nervous system*. The same symptoms are observed in excessive hæmorrhage, in which, as in asphyxia, the supply of blood to the brain is gradually diminished. Dr. Blundell* describes "*the usual symptoms*" of hæmorrhage to be "dyspnœa, struggling, cessation of the circulation, relaxation of the abdominal muscles, and a complete asphyxia." In a sheep, in Dr. Kellie's experiments, in his paper on †Death from Cold, "Ten minutes after the carotid had been opened, the breathing was hurried and

* Researches. P. 82.

† On Death from Cold. —Edin. Medico-Chirurg. Trans.—P 107.

laborious, and the animal was slightly convulsed. The blood, for ten minutes, trickled more slowly down the neck; the eye became heavy and listless, and the breathing more oppressed; and at twenty minutes from the commencement of the experiment there was general convulsion, and the animal instantly expired." "In sheep slaughtered" in Dr. Kellie's "presence by the butcher, the blood rushed out in torrents. In one minute after the infliction of the wound, the animal became convulsed, and in two minutes died." (P. 109.) Another sheep, bled from the jugular vein, he describes to have had "strong convulsion and uneasy respiration." (P. 111.)

Asphyxia, from the cessation of the respiratory function, differs from asphyxia from hæmorrhage, because in the former the quantity of the blood remains undiminished—the venous system is congested—certain quantities of imperfectly arterialized blood have circulated for a short time through the capillary system. After these circumstances have transpired, life can by various means be restored. Death is for some time apparent, not real; but it remains to be investigated whether some means of resuscitation used in the latter, can be applied with success to the former mode of death.

I rejoice that I am not obliged to rely solely either on the positive or negative method of demonstration adduced in this paper. The experiments of Edwards on asphyxia in reptiles and in young mammiferous animals are exact and comprehensive, and afford collateral support to the conclusions advanced. They prove that venous blood, though incapable of supporting life for an indefinite period, exerts no positively noxious influence on the nervous system of animals.

"The first question which presents itself in asphyxia is, to discover what is the influence of the circulation of dark blood on the nervous and muscular systems."

"I excised the heart from frogs which were placed under a receiver in water deprived of air by boiling; I left an equal number of them untouched, which I enclosed also under a receiver in unærated water. The difference of the duration of life between the two cases, has been more than twenty hours in favour of the last: and it has always been so marked in the numerous experiments that I have made, that I shall say no more concerning this subject. I obtained similar results with toads and salamanders."

The same results are also obtained when the lungs are excised.

"The influence of blood unexposed to the action of the air, is therefore," he adds, "favourable to the action of the nervous and muscular system, because it prolongs its duration: but

these two functions united in asphyxia by submersion, sustain only a short existence."

In animals recently born, the *foramen ovale* and *ductus arteriosus* remain open, and Buffon discovered that these animals could live submersed for a much longer period than animals of the same species, which had respired, and whose organs and functions were fully developed. Young animals lived submersed half an hour, and Edwards found that one lived fifty four minutes under water without respiring. According to Legallois, at the end of five days, young rabbits (which immediately after birth lived submersed twenty eight minutes) survived only sixteen minutes. In five days more this period was reduced to five minutes and a half; and when they were fifteen days old, was confined within the limit which the warm blooded animals can never surmount when they are deprived of the influence of the air. Edwards however proved, that the guinea-pig, immediately after birth, could live submersed only three or four minutes longer than an adult.

Endeavouring to explain the reason of this difference in these animals Edwards discovered, that young dogs, cats, and rabbits, possess, immediately after birth, a power of generating heat much inferior to guinea-pigs of the same age. The faculty of generating heat also increases with the age of the animals, whilst the period during which they can survive submersion, diminishes until the fifteenth day.

Their temperature is then equal to that of adults, and they differ little from them in the time that elapses before complete asphyxia is produced, when atmospheric air is excluded. The division therefore established in the ages and species of these young mammiferous animals, in reference to their power of generating heat, is applicable to them also with respect to their duration of life, when the respiratory phenomena are arrested. This duration is more protracted in the mammiferous animals which produce the least heat at their birth; and it is shorter in those which produce the most. He made also similar observations concerning birds. Though, however, some of these animals live half an hour submersed, the power of voluntary motion and the exercise of the senses, are lost in three or four minutes.

Some animals of cold blood, when their faculty of generating heat has been depressed by a long exposure to a low external temperature, on submersion in water at Zero, live two or three days in it deprived of air. But if the experiment be made in summer, in water at the temperature of 20° of the centigrade thermometer, they survive only an hour more or less, according to the intensity of the preceding heat. If the temperature of

the fluid be raised to 40° they live no longer than adult mammiferous animals. Edwards concludes from these facts, that heat, whether produced by the animal or communicated by external influences, exerts a similar influence on the duration of life in asphyxia.

The scale of temperature to which these observations refer, ranges from 0° to 40° centigrade. It is remarkable, that at the superior limit, there is so little difference in the time during which animals can survive without respiring. It is only in the inferior degrees that these differences become more marked, according to the species, and in a greater proportion as we approach the lowest range of temperature. These differences depend chiefly on two conditions, viz., the degree of diminution in temperature which the species can bear, and on the time during which they can exist in this state under the influence of a cold air.

Much of the difference observed must evidently be attributed to the degree in which the faculty of generating heat has been developed. The circulation of arterial blood subjected to the atmospheric influence is, compared with the venous, greatly in favour of the evolution of animal heat. Now, in young animals, the *foramen ovale*, and *ductus arteriosus* remain for some time open; and the period during which the faculty of generating heat may remain beneath that of adults of the same species, must be greatly influenced by the period during which venous blood is transfused into the arterial system through these channels; as the degree of the depression of their temperature will be determined by the size of these openings compared with the bulk of the animal, and consequently the quantity of the dark blood which is transmitted by them. Life is, in the first place, prolonged, because these channels remain pervious to the current of the circulation, which would otherwise be arrested; since the lungs, when the respiratory phenomena cease, are no longer permeated by the blood. But when the circulation continues through these openings, and the venous blood is transmitted unchanged through all the tissues, life is supported for a period which is inversely, as the degree of heat produced by the animal, or, in other words, in proportion as the blood, in the process of nutrition, undergoes fewer and less rapid changes.

The circulation of venous blood therefore contributes to the maintenance of life in the reptiles, for they survive longer under its influence than when it is removed. Edwards demonstrates the law in the same manner in the young mammiferous animals, and concludes that the venous blood would contribute to support life in the adults of warm-blooded animals.

When respiration is suspended, the circulation continues whilst the lungs contain oxygen. During this period the blood which permeates the lungs gradually abstracts the oxygen they contain, and, as the quantity of this gas diminishes, possesses less and less of the arterial character. Much blood almost duly arterialized, circulates in the first moments after inspiration ceases; and the quantity passing in a given time diminishes as its colour becomes darker, until in those moments which precede the arrest of the circulation, it closely resembles the venous fluid, and is propelled into the arteries with languor, and in inconsiderable quantities.

Venous blood appears to be capable of supporting the functions of the nervous system for a short period only. Were this fluid to circulate freely through the brain its functions would, ere long, be totally suspended from the want of stimulus and nourishment, and its propulsion into the brainular mass soon produces languor and feebleness. The venous blood does not however exert a positively noxious influence on the nervous system, nor destroy its faculties by mere contact, like a foreign fluid.

In asphyxia, the imperfectly arterialized blood which circulates through the brain, is less conducive to the maintenance of its functions than arterial blood: but those functions and life are abolished, because the circulation is arrested in the lungs when the respiratory phenomena cease. The fluid which is then propelled into the nervous tissue, though less capable of developing its powers than arterial blood, can maintain for a time imperfect motions of the vital parts, and contribute to the evolution of an inferior order of vital phenomena.

This inquiry has important relations to most interesting subjects of investigation.—The functions of the pneumogastric nerve appear to be in no slight degree elucidated by it, and we may hope to derive from it important information concerning the succession of physiological phenomena in death from coma. Other questions arise out of it which are still more intimately connected with it, but to which, after having made so great a demand upon the attention of the reader, I must forbear adverting.

ART. VIII.—*Observations on Ileus.* By EDMUND LYON, M. D. one of the Physicians to the Manchester Royal Infirmary, &c.

CASES of Ileus, I believe, generally, if not always, arise from obstruction of a mechanical nature in some part of the small intestine. Two rather uncommon instances of this kind, which have fallen under my observation, may perhaps appear worthy of being added to the store of analogous facts already recorded.—The following case also, though in one respect incomplete, exemplifies the wonderful resources of the animal economy in circumstances that might be considered almost hopeless.

CASE I.—On Friday afternoon the 5th of Feby. 1830, I was desired to visit Mrs. W——, aged 66, of a naturally strong constitution, but subject to occasional dyspeptic symptoms. She had been seriously ill for a week; during which time there had been a total obstruction of the bowels, and for the last four days continual vomiting, with most excruciating pain in the abdomen, more particularly about the navel:—the matter now thrown up was bilious and feculent; the pain unabated; pulse firm, and not more than 108 in a minute; tongue covered with a dark brown crust, and very dry. Purgatives of various kinds had been given, such as Calomel and Colocynth, Epsom salt and Senna, Croton oil, and a combination of Epsom salt with an alkaline carbonate, taken along with lemon juice; but all were rejected: Opium had also been tried; a blister had been applied to the abdomen, followed by leeches; and glysters had been repeatedly given;—all without affording the slightest relief.

R—Hydrarg: Submuriat: ʒj.—Opii gr v.—Syrupi q. s. ft. pil: iv—capt. j 3tiâ quâque horâ.

As little drink of any kind to be taken as possible; the belly to be diligently fomented.

Feby. 6th.—All the pills were taken in the course of the night, and remained upon the stomach; no vomiting having occurred since the first dose, and the pain being more moderate. Two glysters were given in the course of the day,—at 1 o'clock and at 4,—and were returned without excrement. In the evening the abdomen was much swelled, and there was a feeling of fulness up to the throat. I directed her to take, every three hours, a pill consisting of soap and rhubarb, with half a drop of Croton oil in each; and to have a glyster administered, containing an ounce of Ol: Terebinth: rubbed up with yoke of egg and gruel. The glyster brought away a small quantity of feculent matter, attended with much smarting; and was repeated with like effect at 5 in the morning of the 7th. After the third pill, vomiting came on, and a great quantity of feculent fluid was thrown up: the swelling of the abdomen subsided, and the pain was diminished.

R—Pulv : Rhei : 3j—Potassæ Carbonat: 3iij—Tinct. Sennæ f3j—Aquæ Menth : virid : f3v.—Sumatur 4tâ q. q. horâ 3j c. 3ss succi Limonis.

On Monday the 8th, there had been no more vomiting; but the obstruction was not removed. Another turpentine glyster was given at 1 o'clock, which brought away some small costive lumps. The patient was languid and suffering a good deal of pain.

On the 9th, the pain still continuing, and the pulse being pretty strong, twelve leeches were applied, and borne very well; but the weight of a poultice aggravated the pain, and in the afternoon severe vomiting came on, which left the patient so weak and exhausted, that it was feared she would scarcely live through the night. Common glysters were given repeatedly with some advantage, and one with a tea-spoon full of laudanum procured a little respite from pain; so that on the morning of the 10th she was a little recruited. Some pills formed of Extr: Hyoscyami and Extr: Coloc: comp: had not been persisted in, on account of the sickness. On the 11th, the symptoms continuing unabated, a draught, composed of Confect: Aromatica, Træ Opii 3ss, and Mist: Camphoræ, was given in the evening with the effect of procuring some comfortable sleep in the night, and comparative ease during the following day; at the close of which the draught was repeated with advantage. In the morning of the 13th the patient again suffered much pain in the belly, and for a short time complained of cramp in the calves of her legs; there were also thirst and sickness, but no vomiting. A common glyster was administered, and brought away some feculent matter with small scybala. The draught was repeated, and the abdomen ordered to be rubbed with soap liniment and laudanum.

Sunday 14th. She could not endure the liniment, as the smell of it made her sick; and in the evening, after an ineffective glyster, she vomited a little, and felt her stomach so unsettled that she would not venture to take the anodyne draught:—the night was passed in pain and restlessness. At 2 in the morning of the 15th, another glyster was given, which brought away a good quantity of fæces, and was subsequently followed by a spontaneous motion. The draught was taken at 10 A. M., but the pain and sickness were not alleviated. *The pain is described as of a grinding kind, with frequent severe twinges about the Umbilicus; and sometimes no part of the body is free from pain: the pulse continues at 108.* An ounce of Castor oil was given in the afternoon, and agreed very well, procuring one motion; the anodyne draught was taken at night, and the patient slept well.

There was no material change until early in the morning of the 19th, when a copious discharge of clotted and fluid blood took place from the bowels after very severe pain. An acidulated solution of Magnesiæ Sulphas with Træ Opii afforded apparently no relief: there was much sickness, though less pain; and the patient complained again of thirst. She passed a restless night, and in the morning of Saturday the 20th, had an evacuation of reddish-brown fluid containing a few small clots of blood, which left her very weak and languid. A draught consisting of Confect: Opii 3ij in Aquæ Cinnamomi 3j, was given at

night with good effect, and repeated on Sunday morning and evening.

On Monday evening (the 22nd,) owing to sickness, the draught was not taken, and the night was passed in pain. At 5 in the morning of the 23rd, the draught was taken, and immediately rejected: at 9, an ounce of Castor oil was given, which began to operate at 11, procuring three copious evacuations;—the first two dark coloured and offensive, and followed by a feeling of exhaustion; the last of improved appearance, and attended by more comfortable feelings.

From this time the case went on favourably: pain did not cease to be felt; but it was milder in degree, and continued to change its seat, and in a few days the opiate draught given by halves was found sufficient for its alleviation. Though there was occasional vomiting, small quantities of broth, and other mild kinds of nutriment were now taken with pleasure and advantage, and the bowels were regulated by Castor oil until Sunday the 28th, when the following medicine was ordered:—

R—Decocti Aloes comp: ℥vj—Træ Opii ℥i—Sumatur ℥j vel ℥ss bis quotidie.

The smaller dose of this was found, after the second day, to be sufficient for the purpose.

On Tuesday the second of March, the patient sat up for a short time, and from day to day prolonged the time of her sitting up, as her strength increased; which it continued to do, notwithstanding occasional complaints of severe pain, until the 15th, when after straining at stool for an hour, she passed a large gall-stone $2\frac{3}{8}$ inches in length, and $1\frac{1}{8}$ inch in its greatest diameter: on being sawn through, it was of a uniform yellow colour, except on the outside, which was of a dirty brown, or grey, for the thickness of a line; a pearly white appearance was produced by scraping one of the cut surfaces. One half of the concretion remains in the possession of Dr. Henry, who subjected it to such trials as satisfied him as to its biliary character.

Recovery went on without hindrance after this occurrence: though shortly afterwards she was under surgical treatment for erysipelatous œdema of the legs.

The questions which present themselves, on considering the circumstances of the history now given, are 1st.—How did the concretion pass from the gall-bladder into the intestine? And 2nd.—In what situation did it give rise to the symptoms of obstruction? That such a mass should have passed along the common duct is utterly incredible, not only on account of its magnitude, but from the absence of icteric symptoms; the only alternative therefore is, that the concretion made its way into the gut by ulceration, or rather by the process named in Hunterian phrase *progressive absorption*, which we know, by numerous examples, to be carried on without any very serious disturbance of the system. The last remark necessarily implies my opinion of the answer to be given to the second inquiry;—namely, that the symptoms of obstruction did not

occur until after the concretion was lodged in some part of the intestine, most probably the duodenum; the presence of a foreign body in a canal disposed to irregular contraction, and irritated into unusual propulsive efforts, will sufficiently account for all the phenomena; and this view of the case is confirmed by the occurrence of successive paroxysms of pain, agreeing in kind, but inferior in degree to that felt at first, and changing its seat according to the gradual progress of the gall-stone towards expulsion.

It may be profitable to direct the reader's attention to a few cases, bearing a partial resemblance to the one here detailed; and the first that I shall notice is one related by Mr. Brayne in the 12th volume of the *Medico-Chirurgical Transactions*.

I.—A woman aged 55 years, after five or six paroxysms of pain in the epigastrium, lasting several hours, (followed sometimes, but not always by slight jaundice,) and recurring after intervals of two or three weeks,—fell into a state of fever, which continued without any local pain for a month; when she was suddenly seized with severe pain in the *left* iliac region, accompanied by considerable tenderness on pressure. This pain continued for 16 or 18 hours; after which she became suddenly easy, and soon passed a natural stool, containing a biliary calculus which measured in its long diameter $1\frac{3}{8}$ inch, and in its short diameter $1\frac{1}{8}$ inch. Inspection of the body about a year and a half afterwards, discovered a strong adhesion, the size of a shilling between the thickened gall-bladder and the duodenum; and in the centre of the adhesion an opening large enough to admit a crow-quill.

II.—In the same paper Mr. Brayne gives a second case, occurring in a woman of 65, who, a few days after recovering from a formidable attack of Ileus, passed a gall-stone rather larger than the first mentioned one, and in six days another somewhat smaller. For some months before the attack of Ileus, oppression and pain occasionally severe, had been felt in the epigastrium; but no degree of jaundice had been observed. Dropsical symptoms, in both cases, followed the expulsion of the gall-stones.

III.—In the 6th vol. of the *Med. Chir. Trans.*, Mr. Thomas relates the particulars of a case of Ileus in a woman aged 63, who had long been afflicted with an irreducible umbilical hernia: she was relieved by the sudden discharge of a solid body, followed by a large quantity of fæces. The substance was ascertained by Dr. Marcet, to be a biliary concretion, measuring 1.6 inch in its long diameter, and 1.1 inch in its short diameter. A slight degree of jaundice took place *after* the expulsion of the concretion.

IV.—A gall-stone 2 inches long, and $1\frac{1}{2}$ in diameter, is mentioned in the 9th volume of the *Lancet*, p. 368, as having been taken by Mr. Stanley, from the jejunum of an old man, who died within five days from the invasion of Ileus, for the relief of which an operation was performed on a small ventral hernia containing only omentum.

It is said, that “at the termination of the *ductus communis chole-dochus in the duodenum a large cavity* had been formed; in which this stone must have been lodged for years, and acquired its present size, but [which] had subsequently ulcerated, and permitted the escape of the stone into the intestine; for the cystic and hepatic ducts were not much larger than ordinary, but were considerably ulcerated and matted together.”

V.—Dr. Pemberton, in his treatise on diseases of the abdominal viscera, speaks of a gall-stone passing the ducts, whose long diameter was $2\frac{1}{4}$ inches, and the short diameter $1\frac{1}{4}$ inch. The patient suffered acute pain during five months, and was probably affected with jaundice.

The only other instance I shall now refer to is the last in a collection of curious cases, illustrative of disease of the gall-bladder, published by M. Petit in the first volume of *Memoirs of the Royal Academy of Surgery at Paris*, as translated into English in 1750.

VI.—A lady being afflicted with jaundice, accompanied with colic, there arose in her right hypochondrium a tumor, which by degrees became considerable:—the warm bath alone afforded some relief. After bathing for the third time, she was seized with vomiting, occasioned by the return of her colic, accompanied with convulsions, and a great discharge of blood by stool. “And a stone of a brown color, marked like a shark’s skin almost all over, was found in her fæces, which weighed three drachms and a half, was two inches and a half long, and an inch and a half in diameter.”

“Some time after the discharge of this stone, the patient parted with a kind of (putrified) bag, or membrane, by pieces.”

CASE II.—James M’Bride, labourer, aged 28, formerly a sailor, and a man of irregular habits, was admitted a home-patient of the Manchester Infirmary and Dispensary on Thursday, the 12th of October, 1820. He had been affected since the 7th with acute pain in the belly, and obstinate constipation, accompanied by headache; for which venesection, and leeches to the abdomen were employed on the 11th, and repeated on the 12th before my visit; at which time, in addition to the other symptoms, the patient was incapable of retaining any thing on his stomach, and the pulse was 120, and feeble. I was informed that he had been subject to similar attacks for at least four years, and that they sometimes lasted two or three weeks.

Two ten-grain doses of calomel were given without advantage; and various other means, including tobacco injection, were used in vain during the three days that he remained at home. On the 15th he was removed into the Infirmary, where calomel and opium, combined in the proportion of 10 grains of the former to $1\frac{1}{2}$ of the latter, —effervescing saline draughts, the warm bath, and repeated bleedings were had recourse to: several turpentine glysters were also administered, which seemed to afford more relief than any thing else. Some scanty, but no effectual evacuations were procured from the bowels; and he was never completely freed from pain and sickness: death took place on the 21st.

On the following day the body was inspected during my unavoidable absence. Numerous adhesions existed between the peritoneal surfaces of the abdominal viscera; and the lower part of the ileum was found to be obstructed by a band of organized lymph passing tightly over it. Above the obstruction the intestine was much inflamed, and distended with fæces and flatus: the colon was empty. When the intestine was cut open a few days afterwards, in the obstructed portion of the ileum was found a triangular piece of glass,—the longest side of which exceeded three-fourths of an inch in length,—apparently part of a broken phial.

Introsusception is perhaps most frequently a coincident, if not the cause of ileus in infants. I had, not long ago, an opportunity of witnessing recovery from extreme peril by this disease, in a child of ten months, under the care of Messrs. Goodlad of Bury: the favourable crisis was marked by the discharge of a small and thin membranous tube, about four inches in length; the most probable way of accounting for which is, to suppose the separation of an introsuscepted portion of the small intestine, though it may possibly have been merely the result of plastic inflammation of the mucous membrane. The action of this child's bowels had been sluggish from the day of his birth.

The most important practical precept, I think, to be deduced from the result of general experience in this disease is, to be cautious in the administration of strong purgatives by the mouth; for if they fail to procure a passage, they must aggravate the distress. After bloodletting, where circumstances require it, I would rely principally upon opium, and calomel, in large doses, and on the administration of *enemata* of various kinds, along with the warm bath, or fomentations. Calomel, in doses of ten grains and upwards, ought scarcely to be regarded as a mere purgative; for in complaints of an inflammatory character, or tendency, it appears to have a sedative and tranquillizing effect, more especially when combined with opium. *Enemata* are advantageous by acting upon a part of the bowels below the seat of obstruction, and may be considered as soliciting rather than enforcing the liberation of the imprisoned contents of the upper bowels. But, after all that art can do, it must be confessed that a great part of our reliance for success in these cases must be placed in the VIS MEDICATRIX NATURÆ.

Princess Street, April 18th, 1831.

ART. IX.—*On the Co-existence of Mumps, with Leucorrhæal Discharge.* By JOHN DUNN, Esq., Surgeon, Scarborough.

My partner Mr. Travis was requested to prescribe for a child two and a half years old, who had been suffering from a discharge of mucopurulent fluid from the vagina. She had got all her teeth, and the bowels had been attended to. Considering it a case of leucorrhœa infantum he ordered an injection. When I saw the little patient, the complaint had advanced, and was not only attended with very copious discharge of pus, but accompanied with dreadful pain in making water, and considerable heat and redness in the vagina. On close examination, which with a child in pain is always a difficult matter, I found the inflammation much increased about the nymphæ and vicinity of the hymen, and on pressing the perinœum upwards, a great deal of matter escaped from the aperture of the latter. This led me to suspect there might have been an abscess which was thus discharging itself. Leeches, poultices, the warm hip bath, and castor oil, relieved her, but she still continued a severe sufferer, dreading the evacuation of either her bowels or bladder, and losing her appetite, flesh and strength.

Another instance of the same kind soon followed in her sister, Miss M., four years of age; and what added much to our distress, two of the maid servants, the cook and house-maid, were ascertained to be equally suffering. The children neither slept with each other, nor with either of these servants. The house-maid was refused admission into her father's house, from his considering her the victim of an improper disease, an opinion I am informed, at first supported by the medical gentleman who examined her. As the *mumps* had gone through many of the family, and were prevailing, and knowing its singular translations in the male, I could not avoid expressing a hope that time would develop these painful disorders as the metastasis of this Protean malady. I consulted the works of Good, Hamilton, Burns, Clark, and others in vain, for a corroboration of my opinion; nor had any of the hospital physicians I met with in Scarborough during the season, seen a similar case. Dr. Leighton gave me an extract from a German work, Henke's Manual of the Diseases of Infants, vol. ii. p. 125, which mentioned that in the mumps in female patients, "there is pain in the sacrum and pudenda, with itching, burning pain and swelling of the nymphæ," but the discharge is not mentioned for which we were consulted.

At length, after near a fortnight of suffering and uncertainty, my hopes were realized by the swelling in the jaws appearing.

Dr. Murray was called in, who followed up our measures with the addition of mercurial friction under the glands of the neck. Mustard plasters were also applied to the same parts with the best effects; and on the development of the mumps, the original vaginal symptoms rapidly abated. The servants, however, from neglect and exposure to cold in the first stages, (for they then, from a sense of shame, concealed their ailments respecting the vaginal affection,) continued sufferers for a long time, but as they had left the family I had not the opportunity of observing their symptoms. The breasts of the eldest young lady, ætat. thirteen, were excessively painful during the appearance of the mumps, but only a slight discharge manifested itself from the vagina. The young gentleman sustained no other inconvenience than the swelling in the neck. The connection of the mumps with these very unusual symptoms being, I think, thus fairly established, I have obtained from the parents of the children the order of attack in their family. I must premise that the cook was taken ill with symptoms resembling secondary small pox, before she had the mumps, which may by some be supposed to have had its share in modifying the latter; since the eruptive fever left her ill for some time with pains in her joints, and a very fetid breath. I am not, however, disposed to believe that the combination of the two diseases are required to produce this effect, since I have had a case in a milder degree, similar to the last, where there had been no direct intercourse between the families. I have also heard of another, in the practice of Mr. Willis, of this town, and at the end of the season, I fortunately met with Mr. Williams, of Beverley, a surgeon in great practice, who had also seen instances of the mumps, combined with this highly disagreeable and painful condition of the urinary passages. I shall conclude by presenting a copy of the order of attack, as delivered to me by the parents.

I.—“The Cook had the secondary small pox, in March and April, followed in May, by swelling in the jaw and neck, (mumps? but not known as such in the family,) when it was succeeded by a very great discharge and difficulty in making water, which continued when she left her place in June. The discharge did not leave her till November.

II.—“The house-maid early in June complained of pain and swelling in the angles of the jaw, considered by her at that time as a cold and sore throat, for which she had leeches and an ointment applied. When the swelling subsided, a discharge came on from the vagina, with pain in the breast and a number of spots on the body similar to the secondary small pox. The discharge continued till November.

III.—“Master A. æt. 14, complained of pain in the jaw about the

20th of July : leeches were applied, which did not remove the pain or swelling. Mr. Dunn was consulted, and thought it the mumps, and predicted it would spread through the family. This was the first time the disease was identified. It soon disappeared, and the remaining four cases did not require medical treatment at this period.

IV.—“ Master H. was affected in the same way and treated for the mumps.

V.—“ Miss K. æt. 9, then had pains in her face and swelling in the neck, which went off in a week.

VI.—“ Then Miss S. æt. 18, complained ; and as the swelling of the jaws subsided she suffered from hardness and pain in her breasts, and a slight discharge.

VII.—“ Miss M. æt. 4, had the mumps at the same time, and seemed to have got well over it.

VIII.—“ Miss B. æt. $2\frac{1}{2}$, having begun on the 16th August, with a very great discharge, Mr. Travis was sent for on the 17th. As the discharge increased, and was accompanied with severe pain and difficulty in making water, great anxiety was felt, and minute inquiries made into the former ailments of the servants. Miss M. now began to be affected in the same manner. After about 10 days Miss B.'s neck and jaw swelled, the other symptoms began to subside. Miss M. also after some time had an eruption like the housemaid's, and her neck swelled again on the application of the mustard poultices. Although the children got much better, they still continued weak, and did not get quite rid of the discharge till the end of October.”

Scarborough, March 25, 1831.

MANCHESTER EYE INSTITUTION.

ART. X.—*Report on the advantages of extracting the Lens, in some Injuries of the Eye.* By R. T. HUNT, Assistant Surgeon to the Institution, &c.

SURGICAL authors in general, and even those who have particularly devoted their works to Ophthalmic surgery, do not appear, until very recently, to have paid that attention to the modifications of treatment, rendered necessary by various injuries of the eye, which the importance of the subject requires. Accidental lesions of other structures have been most minutely examined, and classified in such a lucid manner, as materially to facilitate the surgeon in adopting that treatment which is best suited to the case before him : whilst in injuries of this organ, which is perhaps the most important of all, not essential to life, we meet with merely a few general directions, referring to the removal of all extraneous substances, the subduing

of inflammation, and its consequences, by the usual means; and where this is impossible, the relieving of those urgent symptoms, both local and constitutional, by which severe injuries of the eye are frequently accompanied.

I do not wish to state, that no attention has been paid to the subject; for many useful observations are to be found in Lawrence's Lectures on the Eye, in the works of Beer of Vienna, and several others, but much still remains to be done, as there are many complicated injuries of this organ, which admit of much greater relief, than the usual plan of treatment is calculated to afford: nor are the following remarks made public with a view of diminishing that well-founded confidence in active measures, so firmly impressed upon the mind of every practical surgeon; but their tendency is, to introduce into notice an operation, which in consequence of mitigating severe symptoms, and of procuring for an individual, (who without such aid, would be bereft of all useful vision,) a very considerable degree of sight, must form a valuable auxiliary to those means usually employed at present.

Accidents are continually occurring by which the cornea, iris, lens, and its capsule, are more or less wounded; and the consequences of such injuries often prove fatal to vision, even where general and local bleeding, purgatives, mercurials, and counter-irritation have been judiciously resorted to: where, in fact, all has been done, which general treatment can effect. It is the object of this communication to recommend extraction of the lens, in most of these cases; and to found the recommendation upon such principles, as may be generally applicable to complicated injuries of these structures. I am not ignorant, that many surgeons, British as well as Foreign, consider extraction necessary when the lens is entirely dislocated into the anterior chamber, with a view of thus preventing the inflammation its pressure upon the iris generally produces: and no one can deny the propriety of such a proceeding; but I believe no author had described the advantages resulting from its extraction when wounded, although still retaining its position, previously to the appearance of my colleague Mr. Barton's observations on the subject, in the London Medical Gazette of March 20th, 1830. To him I am indebted for originally directing my attention to this practice, and also for having kindly afforded me many opportunities of trying it, which I should not otherwise have obtained.

The several injuries of the eye in which extraction is recommended, are those in which it is absolutely necessary, and those where it is merely a matter of expediency. Among the former may be classed, 1st.—Violent Lacerations of the cornea, accom-

panied by wounds of the capsule and lens, and often by laceration of the iris, caused by large pointed portions of wood, stone, or metal, forcibly driven against the eye, and in which the severity of the injury is such, that not even the most active treatment can prevent the case from terminating in general or partial suppuration within the globe, and consequent loss of vision. 2ndly.—Similar instances in which suppuration has actually commenced, either in the anterior or posterior chamber. 3rdly.—Cases where the cornea is not so badly lacerated, or where the wound has been made by a sharp cutting instrument, but where the structure of the lens is so broken up, as to cause injurious pressure against some part of the Iris, which is itself implicated in the injury; or against the inner surface of the cornea and thus induce severe inflammation. 4thly.—Punctures of the cornea, complicated with injured lens, and prolapsed iris. 5thly.—Contusions of the globe, without lacerations of cornea or iris, but attended by ruptured capsule and injured lens. 6thly.—Wounds of the lens and capsule, in consequence of which, portions of the former are found lying in the anterior chamber. The two latter descriptions of cases, when unaccompanied by severe inflammation, may be included among those, in which extraction is expedient but not absolutely necessary.

With regard to the commencement of inflammation, the time of its occurrence after the accident, will be determined by the severity of the case in question, and the constitutional peculiarities of the individual. In the worst cases it commences immediately upon the receipt of the injury, affecting all those structures which have not suffered so much as to be deprived of their vitality, whilst in those of a milder description, some hours, or even days intervene between the occurrence of the injury and the beginning of inflammation. A knowledge of these facts will guide us in selecting the most suitable time for extraction in various cases; and it may be considered as a fixed principle, that when extraction is necessary, it cannot be performed too soon after the accident, in the most severe instances, but in slighter injuries the operation may be delayed until the supervening of inflammatory symptoms, particularly if there be any doubt of its ultimate necessity.

Accidents of the eye in which extraction of the lens is merely expedient, not absolutely necessary, comprehend all those affecting the lens and its capsule, after which the eye would probably recover so far, under the usual plan of treatment, as to allow of the successful performance of the operation for solution at some future period, provided the injury do not give rise to spontaneous absorption of these structures.

In considering the utility of extraction, in both descriptions

of injuries, many circumstances will require attention. The evidence of several of the following cases, will I trust sufficiently prove the necessity of the operation, in the more serious forms of accident, whilst the recital of the remainder will afford an opportunity of deciding upon its expediency, when compared with the usual operations for solution, performed a considerable time after the injury has been sustained.

CASE 1.—Abraham Wild, a healthy middle-aged man, was dividing a large rail, by means of a chisel and hammer, on the 26th of Jan. 1831, when one of the portions struck his left eye violently. He was stunned by the blow, and according to his own account suffered severely for the next fortnight, during which period, both general and local bleeding, and other judicious measures were employed by the surgeons to whom he applied, with temporary benefit; but the pain was still very intense, when, at the end of this time, he was admitted an in-patient of the Institution. His eye then appeared in the following state. There was a severe laceration of the cornea, commencing almost at the middle of its nasal edge, and extending in a direction towards the centre of that tunic, for about the length of one fourth of its diameter, through which the wounded iris, and capsule of the lens protruded. The edges of the laceration were in a very sloughy state, and the whole cornea very opaque, particularly in the centre near the wound, where the opacity had that yellowish appearance, which depends upon suppuration in the anterior chamber; in consequence of which the colour of the iris could not be seen, with the exception of that portion lying in the laceration. The conjunctiva, as well as the deeper tunics, was reddened by inflammation, the eyelids swollen, and kept constantly closed, and he complained of heat in the eye, accompanied by acute throbbing pain, which extended over the left side of his head, and had rendered him nearly sleepless, since the accident. Mr. Barton decided upon making an incision through the cornea, for the purpose of extracting the contents of the anterior chamber, not so much with a view of ultimately restoring some degree of vision, as the severity of the injury appeared to forbid any such hope, but with the intention of preventing suppuration of the globe, which appeared almost inevitable. The knife was therefore introduced through the cornea, at the side opposite the injury, and the point directed towards the centre of the pupil, when a considerable quantity of something resembling broken up lens, mixed with pus, issued along the blade through the opening, and the dark colour of the iris became more distinctly visible. The man instantly expressed himself much relieved; the eyelids were kept in contact by strips of court plaister, applied in the usual manner, an opiate was ordered, and he was sent to bed. Next morning he stated, that he had passed a comfortable night, and felt much freer from pain.

Capiat Mist: Sennæ Comp: ℥ij. On the succeeding day the dressings were removed, when the incision of the cornea was found quite united, the laceration looked much better, and the whole cornea

much clearer, than at the time of the operation. He also was sensible of the presence of any brilliant light.

March 2nd.—Up to the present time, the treatment has consisted in the occasional use of leeches to the lower eyelid, and blisters to the temple, when the state of the eye seemed to indicate such measures, and the Collyrium Plumbi Superacetatis, together with the application of the nitrate of silver, for the purpose of destroying the protruded portion of iris, and expediting the granulation of the wounded cornea. The eye has now so far recovered from the effects of the injury, that the cornea is perfectly transparent, with the exception of a very limited opacity in the situation of the wound. There is no trace of suppuration having occurred in the anterior chamber, the iris not being in contact with any part of the cornea, except the injured portion; and although the pupil is obliterated, partly by the iris having been drawn between the edges of the corneal laceration, and partly, by a portion of opaque capsule, the iris appears perfectly healthy, and the sensation of light is sufficient to prove the integrity of the retina; there is every reason to hope, that the formation of an artificial pupil will restore a very useful degree of vision. This operation Mr. Barton intends performing, as soon as the eye appears in a favourable condition.

Note.—As the manner of dressing the eye after the operation for extraction, or artificial pupil, adopted at this Institution is different from that usually practised, it may perhaps be better to give some account of it. The operation being completed, two or three strips of court plaister nearly half an inch broad, and about four inches long, are accurately placed upon the eyelids, so as to hold their tarsal margins in contact. The court plaister is preferable to the common adhesive, the lower part of which, would be loosened by the aqueous secretion, and allow the eyelids to be partially opened: it is also better on account of the facility with which it is removed, when the eye is opened for examination. No bandage is applied over this dressing, the perfect closure of the eyelids obviating the necessity for any, and at the same time, keeping the incised cornea in the best position for adhesion.

CASE 2,—Thomas Kilgower was returning from his work on the evening of——— 1830, when he was, unintentionally, suddenly struck in the left eye by a branch of thorn, which a man was swinging round as he passed by him. He instantly experienced great pain in the eye, which continually increased during the night, entirely preventing sleep, and had not abated upon his applying at the Institution next morning. His eye then appeared to have received a severe laceration of the cornea, extending from nearly the centre to the nasal edge, and continued a little way through the sclerotica; between the edges of the laceration lay the torn iris, and capsule of the lens, the iris not having the usual conical appearance of prolapsus, in consequence probably, of the extent of the injury: the pupil was drawn to a mere line, and completely occupied by opaque capsule, and by the broken up structure of the lens, a considerable portion of which was forced into the anterior chamber, and partially mixed with aqueous

humour. There was barely a sensation of light, objects not being at all discernible, and the conjunctiva and adjacent tunics, were deeply injected. The general severity of the injury might have been conjectured, even without examination of the eye, from the agony and irritative fever, under which the patient laboured. Considering this a case where the operation was called for, I proceeded to perform it by making an incision through the lower part of the temporal side of the cornea, when a considerable portion of the lens came out with the aqueous humour, along the blade of the knife, and the remainder was afterwards removed by means of the scoop. The immediate advantages of the operation consisted in the great degree of relief to the patient, and the improvement in the situation of the pupil; for, in consequence of the short time which had elapsed between the accident and operation, the injured portion of iris had contracted no strong adhesions to the edges of the laceration, and when the cornea was divided on the opposite side, the motion of the aqueous humour rushing through the incision, had caused such a diversion in favour of the displaced pupil, that it had afterwards nearly regained its natural position; although still occupied by opaque capsule, and very much contracted in size. The eye was dressed in the usual manner, and as the system in general appeared to have deeply sympathized with the injured organ, he was bled to syncope, as a precautionary measure, although it must be particularly noticed, that the violent pain was immediately relieved by the operation, previously to the bleeding. He slept well the first night, without an opiate, took a common cathartic draught the next morning, continued easier during that day, and on the second from the operation, the dressings were removed. The corneal incision had united by the first intention, the laceration and pupil were both considerably improved in appearance, and he perceived a much greater quantity of light than before the operation, although vision was still indistinct. The Collyrium Plumbi was prescribed, and as a slight degree of pain and injection of the conjunctiva remained, six leeches were ordered to the lower eyelid, and Calomel and Opium with a view of facilitating the absorption of the remaining capsule, and of the lymph effused from the wounded iris.

As this individual had a comfortable home, and his eye appeared in a favourable state, he was allowed to leave the Institution the fifth day after his admittance, and during the following week I saw him at his own house. By the expiration of this time his eye was so much improved, that he attended as an out-patient, and under the combined use of Calomel and Opium internally, and the Belladonna cerate to the eyelids, absorption had made such progress, that he began to distinguish objects, when unfortunately, he absented himself for three weeks, and upon his returning, the pupil was found contracted round the remaining portion of opaque capsule, to which it was firmly adherent; and the vision he had possessed, was now so much deteriorated, that he could merely distinguish a brilliant light from total darkness. The eye was indeed in such a condition, that the formation of an artificial pupil was the only chance remaining. After waiting several

weeks, to allow the eye to recover, I performed Adams's operation, by introducing the iris-knife through the sclerotic coat, and dividing transversely what remained of the opaque capsule, (now a mere point,) and the central portion of the iris; upon withdrawing the instrument the iris retracted, so as to leave a very good pupil, and, as not the slightest degree of inflammation supervened, he left the Institution the second day afterwards, and his vision has since continued so good, that with the assistance of a lens, he can read even small print; although in consequence of his right eye being perfectly sound he seldom uses a glass.

CASE 3.—Timothy Doolan, an Irishman, 60 years of age, was employed in breaking stones upon the road, on the 14th of April, 1830. when his right eye was struck by a large portion, from the stone then under his hammer. He did not come to the Institution until the 19th, when he stated, that he was obliged to leave his work immediately after the accident, in consequence of the violent pain, from which he had obtained no relief, either by day or night, not having undergone any treatment up to that period. There was an extensive laceration of the temporal edge of the cornea, in a sloughy state; protrusion of the iris, injury of the capsule and lens, and suppuration in the anterior chamber. The whole globe had suffered severely from the contusion, and there was no perception of light; to add to this catalogue of evils, the individual was as irritable a mortal as could well be found. Owing to circumstances, it was impossible to make him an in-patient; he was therefore attended at his own home, where the operation was performed the same day. I made an incision through the cornea, a little below the laceration, and what remained of the lens, and a considerable quantity of pus came out, partly by the blade of the knife, and partly by the scoop, which was afterwards introduced; both these processes being accomplished with great difficulty in consequence of his constant irritability. He now expressed himself rather easier, his eyelids were secured, in the usual way, and he was bled freely from the arm. Upon calling in the evening, I found he had obtained three hours' comfortable sleep, and suffered much less pain. He was ordered a grain of opium, and particularly cautioned against rubbing his eye, to which he seemed very much disposed.

20th.—He has passed a very restless night, and the dressings are nearly rubbed off the eyelid. They were replaced by fresh strips, after freely bathing the lids with warm water, he was ordered a blister to the temple, and a pill composed of three grains of calomel and half a grain of opium every fourth hour.

21st.—He is much easier. The laceration in the cornea has improved in appearance, the slough having separated, and there is no pus in the anterior chamber; but as the incision has not united by adhesion, it must consequently heal by granulation, and there still remains a considerable degree of conjunctival inflammation. As it appeared impossible for him to retain the dressings on his eyelids and as he was so unmanageable that he would sit by the fireside instead of remaining in bed in a dark room, the Collyrium Plumbi was ordered

to be constantly applied by means of a cloth laid upon the eyelids, the blister to be kept open by Ceratum Lyttæ: and, as a considerable degree of Ptyalism was induced, Magnes: Sulphat: \mathfrak{z} ss, every morning.

May 5th.—During the last fortnight the eye has gradually improved under the combined use of mercurials, purgatives, and counter irritation; and the laceration and incision of the cornea are entirely healed; and, although in consequence of the extent of injury, this tunic is diminished in size, nearly three-fourths of it is perfectly transparent, through which, the iris (which together with the remains of opaque capsule is adherent to the whole length of the laceration) appears in a healthy condition. And as he can distinguish a bright light, the operation for artificial pupil would be advisable, were not his advanced age and, more particularly, his extreme irritability, material objections against adopting such a proceeding. I saw this patient again at the end of several months, at which time the only alteration consisted in the eye being rather more sensible of the presence of light.

CASE 4.—Mary Holden, a young woman about 20 years of age, applied on the 28th of June, 1830, in consequence of an accident of the left eye, which had occurred some days before; but, as she resided at a distance, and would not consent to the operation, which was considered expedient, until she had consulted her friends, a few leeches to the lower eyelid, purgatives and a common collyrium were prescribed, and she was not admitted an in-patient until July the 6th. This injury was caused by accidentally swinging the scissors which hung at her side, whilst bed-making, against her left eye. The points had penetrated the centre of the cornea, wounded the capsule and lens, and torn the iris, a filament of which, together with a part of the opaque capsule, was adherent to the corneal injury; which, as the instrument had been moderately sharp, appeared to have united by the first intention. The pupil was drawn downwards, and very much lessened in its tranverse diameter: the conjunctiva was very vascular, and the iris slightly inflamed, but the injury was not attended by any violent pain: there was, however, considerable intolerance of light, and vision was so much impaired that no object was discernible.

I made an incision through the lower part of the cornea, on the temporal side, and the lens, which had been effectually broken up by the accident, passed out through the opening, mixed with the aqueous humour: there was a slight protrusion of the iris, through the lower part of the incision, but this was easily reduced, and the usual dressings being applied, the patient was ordered to sit up till evening, which is probably the best position for some hours after the operation, where the injury has not been very severe. The usual treatment was adopted until the second day, when the dressings were removed and the eye opened. The corneal incision was quite healed, the adhesions of the cornea to the iris, and opaque capsule, had become separated, and so much of the pupil was clear, that objects were distinctly

visible. She was ordered the Belladonna cerate, and the common cathartic mixture.

23rd.—Her eye was so much improved in every respect, that she was made an out-patient, and continued to attend as such during some weeks; after which time, as the pupil was very small, and opaque capsule still remained in its lower part, the removal of this impediment to vision appeared desirable. This was easily effected by the needle in the usual manner; and, in this instance, the advantage of having previously extracted the lens was evident in the facility with which the thin shred of capsule, was torn asunder by the instrument.

CASE 5.—Wm. Barret injured his left eye, whilst cutting a hedge, on Jan. 3rd, 1828, by the rebounding of a bough of thorn. He suffered at the time from severe pain in the eye and intolerance of light, the former of which had subsided by the 8th, the day on which he applied at the Institution. A single thorn had passed through the cornea rather below its centre, through the capsule, and into the lens, without remaining in the eye. The lens was so injured as to press upon the lower pupillar margin of the iris, (whose contraction at this part, it entirely prevented,) and to project into the anterior chamber; it was also opaque, preventing objects from being distinguished. The conjunctiva was more injected than in the natural state; and although very little pain was felt, there was a great degree of intolerance of light. He was ordered Collyrium Plumbi, six leeches to the lower eyelid, and purgatives.

12th.—The eye continuing in the state already described, I proceeded to extract the lens, by means of an incision through the temporal side of the cornea. Upon withdrawing the knife, the iris protruded, preventing the escape of the lens, but upon exposing the eye to the light of a candle, the protruded portion was instantly retracted, and the operation completed, by removing the injured structure of the lens with the scoop. The eye was dressed in the usual way, and nothing prescribed except the common house medicine until the 14th, when the eye was opened. The incision of the cornea had united, and the pupil had regained its natural action, although, owing to some remains of opaque capsule, vision was still indistinct. The Belladonna cerate was ordered to be constantly applied to the eyelids; the state of his bowels was attended to, no unpleasant symptoms occurred; and on the 24th he was made an out-patient, and as he lived a considerable distance in the country, he was not seen again until a week had expired. By this time the capsule had entirely disappeared, there was scarcely any evidence of the cornea having been divided, and vision was so perfect, that he fancied he could see objects distinctly, at a greater distance with this eye, than with the right, even without a glass.

CASE 6.—Edward Holland, aged 30, was admitted an in-patient March 18th, 1830. His left eye had been wounded, seven weeks previously by part of a stone, which he was breaking, striking violently against it. The pain was very severe for the first twenty-four hours, during which period he kept a bread poultice constantly

applied, and was afterwards ordered twelve leeches to the temple, lotions, and purgatives, by the surgeons to whom he applied. When admitted he could distinguish light, but had no useful vision, and this was a greater loss to him, as his right eye had materially suffered from protrusion of the iris, through an ulcer of the cornea. The cornea had been lacerated in the centre, but the wound was perfectly united; the capsule and lens had also participated in the injury, and the latter projected so far into the anterior chamber, as to be almost in contact with the inner surface of the cornea; it also caused such pressure on the pupillar margin of the iris, as to prevent its proper action. Mr. Barton extracted the lens, by means of an incision through the cornea, and it came away so easily along the blade of the knife, that the scoop was entirely unnecessary. The patient was dressed and treated in the usual manner, and the eye opened on the third day, when the corneal incision appeared to have united by adhesion; the pupil was perfectly regular, and vision much improved, though still rather indistinct, in consequence of some opaque capsule remaining in the pupil.

April 17th.—The treatment has hitherto consisted in the application of Belladonna cerate to the eyelids, and occasional purgatives, but as the opaque capsule still occupies a portion of the pupil, it was broken up, by Mr. Barton's introducing the needle through the sclerotic coat in the usual manner. A week afterwards he could distinguish objects, and possessed, with the assistance of a glass, sufficient power of vision to read even small print.

March 21st. 1831.—I have to day seen this individual, his sight continues good, and the corneal incision has left no opacity.

CASE 7.—Mary Anne Towns, whilst at work on the evening of Dec. 29th, 1830, in drawing her needle unfortunately passed it through the right cornea. She did not suffer much pain, but in a short time, vision became indistinct, and by the next day, she could discern objects only very imperfectly.

30th.—Admitted an in-patient. The wound by which the needle penetrated through the centre of the cornea is scarcely perceptible, the capsule is opened and the lens so injured as to press forwards into the pupil, which is more dilated than natural, apparently owing to the pressure of the lens preventing its contraction. There is slight redness of the conjunctiva, and intolerance of light; but urgent inflammatory symptoms are present. I made an incision through the cornea, and dipped the point of the knife into the centre of the pupil, with the view of allowing the broken up lens to pass along its blade; but as this did not take place, I introduced the scoop, by which the lens passed, leaving the centre of the pupil perfectly clear. The eyelids were then fixed, and the case went on favourably until Jan. 1st. when the eye was opened. The section of the cornea was quite healed, and the pupil rather irregular, (owing to a portion of opaque capsule adhering to its nasal margin,) but still so clear in the centre, as to allow objects to be distinguished, and there was considerable vascularity of the conjunctiva, accompanied by some degree of pain.

Eight leeches were ordered to the lower eyelid, the Belladonna

lotion to be used during the day and the cerate at night, house medicine every morning.

2nd.—Pupil fully dilated, conjunctival inflammation not much diminished. Leeches repeated other treatment continued.

4th.—The inflammatory symptoms which had abated, again increased, accompanied by pain in the head. Leeches repeated: blister to the temple; omit the Belladonna cerate, as it has produced considerable irritation of the skin—5 grs. of Blue Pill half a gr. of Opium to be taken every 6th hour.

From this period to the 13th, the eye continued gradually improving, and, as on this day it was perfectly free from inflammation, and the remaining capsule which occupied the lower half of the pupil, was not absorbed, it was broken up by the needle for solution.

March 26th.—After the use of the needle she had a recurrence of most of the severe symptoms, which were subdued by similar treatment to that formerly adopted, and the eye has now been free from inflammation for many weeks; vision gradually improving, pupil regular, but capsule not entirely absorbed; she has resumed her work, and attends only occasionally.

For the two following cases I am indebted to Mr. Windsor, one of the Surgeons of the Manchester Eye Institution.

CASE 8th.—1830, 4th Month 16th, John Passmore, living near Shudehill, in returning home was attacked by some disorderly people, and in the scuffle his left eye was injured. On applying a few days afterwards at the Eye Institution, the eye presented an accidental cataract attended with considerable inflammation. It was thought advisable immediately to extract the cataract, which was followed by relief, but the inflammatory symptoms, as injection of the vessels, pain, and lachrymation, did not entirely go off for some time.

5th Month 14th.—A small remaining portion of opaque lens was broken up by the needle. His vision was pretty well restored, but a slight opacity of the cornea still remained when he was last seen.

CASE 9.—1831, 3rd Month, Mary Wrigley applied at the Eye Institution, about five months ago, with accidental cataract of the right eye, and slight opacity of the cornea over the pupil. The vessels of the sclerotica and conjunctiva much injected, with considerable pain, and lachrymation, and the lens partially protruded into the anterior chamber. I extracted the lens about a week after her application, (1830, 11th Month 19th,) which was attended with considerable relief, but the inflammation in two or three days somewhat returned and required active antiphlogistic treatment, viz. leeches, purgatives, sedative lotions, &c. Her vision has been gradually improving ever since, and the opacity of the cornea diminishing. At present, the pupil is irregular, and transversely oblong, a portion of capsule still remaining, but the pupil is gradually improving. States that the accident arose from a fork, which struck against the eye, and she did not apply at the Institution till a week afterwards. Health in other respects good. Is still a patient of the Institution, and gradually improving under the following treatment.

Lotio Belladonnæ—Ung : Belladonnæ—Empl : Lyttæ pone aurem
—Pilul : Purgant.

The foregoing cases have been selected from a number of others, as affording examples of a variety of injuries of different degrees of severity, in which several other structures besides the lens, were implicated; and they consequently form a fair body of evidence, upon the utility of extraction in similar instances. Nor is it difficult to account for the beneficial effects of this operation, if the general principles of those processes which take place in the reparation of injuries in other structures, are attentively considered. All severe lacerations of texture have a tendency to sphacelate, greater in proportion, as the vitality of the part is of a lower degree, and the injury more violent; and this tendency is always increased by any substance pressing against the lacerated surface, or even upon the parts immediately adjacent to the wound. It therefore has become a practical indication, to relieve the parts implicated in such an injury from all extraneous bodies, portions of wood, stone, clothing, &c. for instance, which may be accidentally retained, and will, from the irritation they produce, evidently increase the severity of the case. It must also be remembered, that different structures of the body, when displaced from that situation which they naturally occupy, and, consequently compelled to intrude into the position of some other part, occasion effects, at least, equally injurious, with those resulting from the presence of such substances as we have already mentioned.

Thus a comminuted portion of bone lying in a wound, or the protrusion of bone through a wound in the soft parts, as in a compound fracture, will produce as bad consequences, as the presence of portions of stone, or wood, in similar situations. Another fact of great importance in the present question is, that when a part of the system has suffered to such a degree, owing either to accident or disease, as to be no longer capable of fulfilling its peculiar function, a process is frequently very soon commenced, by whose means the injured structure is separated from its connexions, and gradually expelled; either by means of an external opening through the surrounding textures, or, the absorbents being excited, it is by their action diverted into the general system of the circulation, and thus thrown off, together with the other impurities of the blood. Now as it is possible to hasten, by judicious measures, both these processes, (for instance, as opening an abscess situate beneath a tendinous aponeurosis, frees the adjacent parts from pressure of the fluid, and sloughy cellular membrane, much sooner, and more easily, than would be the case, should we in this instance, rely upon

the unassisted natural processes; and as lymph, when effused into many structures of the body, is much more rapidly absorbed whilst the system is under the influence of mercury;) it is therefore wrong, in any case which is in the least doubtful, to depend too much upon the "*vis medicatrix naturæ*;" particularly where delay will entirely prevent us from deriving that benefit from our interference, which an operation, if performed at a proper period, would have insured, in consequence of such changes having occurred in the mean time, as would entirely preclude such a measure from being advantageous. This manner of viewing the subject appears legitimately applicable to extraction of the lens, in several severe injuries of the eye. You may have a laceration of the cornea and iris, against both which some portion of the lens, or capsule, which, in their natural position, are separated from this tunic by the aqueous humour, is pressing. The iris and capsule are probably forced into the laceration, so that, although owing to the weight of the humours behind, and the muscular spasm, which always accompanies a serious injury of this organ, the aqueous humour has at first escaped, the wound in the cornea is thus filled up, and this fluid is so readily regenerated, as, by again extending the anterior chamber, to add considerably to the already injurious pressure. The structures which chiefly suffer from such pressure, appear to be the cornea, and the iris; the former in a state of irritation from injury, which must be evidently increased by even the slightest pressure; and the latter an extremely delicate and highly vascular texture, whose vessels seem more easily to pour out lymph, than those of almost any other part of the system. Pressure produced by portions of lens in the anterior chamber, acts upon the cornea in such a manner, as to increase by its irritating effects, the degree of inflammation in the parts adjacent to the laceration, and at the same time, has a tendency to excite adhesive inflammation in the whole inner surface of the cornea. The former evil will be readily admitted, as one of the results of the bad effects of pressure, in all lacerated wounds; and, that the latter is not an impossible occurrence, the two following cases will bear witness. The first occurred to Mr. Travers, and the reporter states:*

"In this case the lens was converted into a soft mother-of-pearly whiteness, and had become so enlarged and protruded forwards, that the capsule of the lens was found adherent to the posterior part of the cornea. The original cause of the complaint was a blow on the organ with a stone."

The other was a patient of Mr. Barton's, whose eye was lacerated

* Medical Gazette Feb. 20th, 1830.

by a sharp piece of iron. When he applied about a fortnight after the accident, the iris was obscured from observation by what appeared to be disorganized lens, interposed between this structure and the cornea. This latter tunic was divided by the knife, when the lens was found so perfectly adherent to the inner surface of the cornea, as to be quite inseparable from it. It is also very probable that the frequent occurrence of obliterated anterior chamber in consequence of injury, is owing, in the first instance, to a similar cause.

The evil consequences of pressure of the lens against the iris, consist in the numerous firm adhesions between these structures, and the frequent obliteration of the pupil thus produced. Such is the state of affairs in many injuries, before suppuration has supervened. The occurrence of this process, whether in the lamellar structure of the cornea, or in the anterior or posterior chamber, will, without doubt, considerably add to the already existing irritation, and consequently, to the severity of the case.

It surely cannot be denied, that the removal of the lens in such instances, will relieve the parts from pressure, and place the eye in the most favourable condition for the action of other remedies, and for the exertion of the natural processes of reparation, particularly as in those cases where pus is formed, the same operation which removes the lens, gives exit to this secretion. But should it be allowed that the absence of the lens is desirable, will not its extraction cause such an additional injury to the eye, as will prove highly prejudicial? Before this plan had been adopted, and its results known, this would have been a very material objection to such a method; but as the corneal incision is generally found perfectly healed, upon first opening the eye for examination, in the most severe cases, and, as even in the worst, (that of Doolan, in which the opening was made too near the laceration,) the wound granulated favourably; as the patient very often experiences more relief from the operation, than from depletion, opiates, or any other treatment; and, as in cases where in consequence of the severity of the injury, the pupil has become obliterated, rendering the formation of an artificial pupil necessary, the eye has so much sooner recovered sufficiently to undergo the second operation, than in similar cases, however judiciously treated, in which extraction has not been practised, and has actually proved so healthy, that not the slightest inflammation has supervened upon its performance; these facts I repeat, should at least induce surgeons to give the method a fair trial. And I am fully confident, that such a trial will terminate in their adopting a mode of treatment, by which, many eyes which would otherwise be rendered useless, may be restored to a very considerable degree of vision; and that even where the injury is so

serious, that loss of sight is inevitable, the patient's sufferings may be very much alleviated, by such a practice preventing suppuration of the globe.

These are, I believe, the principal reasons for urging the necessity of extraction of the lens in the severer forms of injury; with respect to those in which it is merely expedient, the following appear important considerations.

1st.—The saving of time to the sufferer, one operation being in general sufficient; and even where the use of the needle is required afterwards, the lens being already absent, we have merely a thin capsule to deal with, whilst if the case has been left to nature, and the usual mode of treatment (supposing absorption of the lens has not occurred,) we have not only capsule, but also diseased lens to break up, and consequently, a much greater length of time elapses before the completion of the cure. Now, although accidental cataracts are occasionally absorbed without any operation being required, when judiciously treated, yet it is but seldom, except in children, that such a favourable result can be procured, whilst the numerous cases of capsule, and lens rendered opaque by accident, and remaining so during five, fifteen, or twenty years, prove the inefficacy of the measures usually adopted; and it also frequently happens in cases of long standing, that the capsule has become so tough, and its adhesions so strong, as effectually to baffle the attempts made to detach it, even after several successive operations.

2ndly.—The advantages early extraction possesses over the use of the needle at some future time, in preventing the formation of adhesions between the lens and surrounding structures.

3rdly.—It not only prevents adhesions from forming, but is also an effectual obstacle against that increase in the size of the lens, which often results from injury of its structure.

4thly.—The safety of the operation; and in judging of this we must not confound the usual operation for the extraction of a hard cataract, caused by disease, (which requires such a large corneal incision and in consequence of its forcible expulsion through the pupil, so frequently produces disease of the iris, and all its injurious consequences,) with that now recommended, which consists in a mere puncture, a very small opening being being sufficient for the exit of an injured lens; and punctures of the cornea, when made with a sharp instrument, causing, generally, much less pain and succeeding inflammation, than those wounds of the conjunctiva and other tunics, inflicted in all the posterior needle operations.

Before concluding, it may perhaps be advisable to mention some restrictions, which may be necessary in the employment

of the proposed method; as circumstances may occasionally occur, which would render the operation inapplicable, attention must be given to the age of the individual; for, if the patient be so young as to render the fixing of the eye, without the aid of a speculum, impossible, or of such an advanced age as would contra-indicate the performance of any operation, extraction of the lens would, in both instances, be improper. And as a farther objection to the operation, at an early age it must be considered, that absorption of an injured lens, like most other reparative processes, proceeds more rapidly, and with much greater certainty in children than in adults. The state of the eye and its appendages, particularly the eyelids, previously to the accident, will also require consideration; for if the globe be affected by disease, if there be any morbid secretion from the conjunctiva, inversion or eversion of the tarsi or eyelashes, tinea, lippitudo, or any material affection of the lids, the operation would be decidedly improper. Then with regard to the accident itself, if complicated with laceration of the lids, this would of course act injuriously, in preventing proper union of the corneal incision. If the eyeball is displaced, if the vitreous humour has even partially escaped through the pupil, if the retina is much injured, and lastly, if the sclerotica is severely lacerated, extraction, with a view of preserving sight, would be unadvisable, although punctured wounds of both these textures are caused by several operations without loss of vision, and in the case of Killgower, previously related, the sclerotica was implicated in the injury.

In performing the operation the same cautions are necessary as in common extraction, but the incision will never require to exceed one sixth of the circumference of the cornea in extent; being in fact a mere puncture. It is also necessary, that a sufficient space of cornea should remain uninjured, through which to make the incision; and it appears from observation, that lacerations of this tunic seldom occur which do not allow ample space for such a puncture. If there should be a considerable prolapse of the iris through the wound of the cornea, it must neither be cut off, nor its reduction attempted, as the expulsion of aqueous humour, when the incision is made, generally materially lessens the prolapse; and the small remaining portion is afterwards easily and safely destroyed, by applying the nitrate of silver. Another important direction is, never to attempt extracting the lens through the opening caused by the injury: as by so doing you interfere with those processes of reparation, which commence very soon after the occurrence of the accident: and should you even succeed in thus removing the lens, a much greater prolapse of the iris must take place,

and probably, some of the broken up structure of the lens will, in passing, be entangled by the ragged edges of the laceration.

The patient must be kept in bed until the dressings are removed, when, if the incision is perfectly united, he may be allowed to sit up; and if there is not too much inflammation present, the Belladonna now becomes a very useful application.

The length of time during which confinement in a dark room will be required, and the necessity of depletion, ptyalism, and counter irritation, must be decided by the exigencies of the case; and, in those instances in which it becomes necessary subsequently to form an artificial pupil, an interval of several weeks must elapse to allow of the subsiding of all inflammatory symptoms.

ART. XI.—*A Report of Cases admitted into the House of Recovery, Manchester, during three months.* By EDW. WALLIS, Surgeon, Hull: late resident Medical Clerk to that Institution.

I BEG to transmit for insertion in the next number of your Journal, the following report of cases admitted into the House of Recovery, Manchester, from June 18th to Nov. 1st, 1830.

This Institution was established 1796, for the better preservation of the inhabitants of Manchester and its vicinity, from infectious fevers, by the removal of persons labouring under them from their own homes to its well ventilated wards, where they might have the attendance of a resident Medical Officer, and careful and properly educated nurses. It could scarcely fail to be highly beneficial, and the liberality with which it is supported, testifies that its utility is duly appreciated. For a brief account of this charity, I refer to Dr. Lyon's paper, in the second number of this Publication.

I solicit the favour of your admission of this Report, on account of the peculiar type which many of the cases have assumed, differing from the fever of this and other years, in the want of prominence of symptoms; in the seat of disease, and in its great fatality. In the fever to which I allude, the mucous membranes of the intestine have undergone considerable changes, and in the fatal cases, ulcers, differing in extent and character have been discovered. Since the publication of Broussais' Views on the cause of Fever, the attention of the profession has been directed to the diseased conditions of the chylipoietic viscera; especially of the mucous membrane of the small intestine. But whilst the French can boast of numerous works on this subject, it is only within a very short period that any British Physicians have directed the attention of their brethren to ulcerated intestine in fever—the principal of these are Drs. Bright, O'Brien,

Southwood Smith, and Tweedie. In the publications of the latter named gentlemen, the cases have neither been so fatal nor numerous as those which I now present to you. Baillie states in his morbid anatomy, that ulceration does not appear so common in the small as in the large intestine. The testimony of Andral and Louis, and of my own dissection, disprove this statement if we restrict it to fever. The peculiar feature of this species of fever will be best exhibited by the detail of a few cases, drawn up as concisely as they will admit, without detracting from their interest.

CASE 1.—A woman aged 24 years, ill 10 days, from Bent Street, Oxford Road, admitted July 24th. Made no particular complaint—pain in the ileo-cæcal region was admitted after very severe pressure—had considerable stupor—pulse irritable and 100—had purging of very fetid stools—loss of sleep and appetite—tongue coated with yellowish fur—lip injected—papillæ elevated. Blister was applied to the seat of pain. Pulv. Doveri et Hyd. cum Cretâ every 5 hours. These medicines were continued till the 29th, when the pain had increased, purging unabated, her general appearance as on her admission, another blister applied—Catechu Mixture every 3 hours. The pain from this time gradually decreased, and eventually disappeared—her purging unaffected by the mixture. 10th.—Chalk Mixture with Laudanum & Tinct. Kino was now prescribed. Compound Chalk powder at bed time. Aug. 3rd.—Diarrhœa still continues—debility very great—profuse perspirations. 4 oz of Port Wine daily—beef tea ad libitum.—3 grs of Superacetate of Lead with 1 of Opium every 5 hours. From this time she gradually recovered, her diarrhœa subsiding, and on the 1st Sep, after a tedious convalescence, during which the glands of the face and neck suppurated, she was discharged cured. Whilst the diarrhœa continued, her stools were watery, of a light yellow colour, as if powdered ochre had been mixed with them, and very fetid.

CASE 2.—A man aged 24 years, ill 14 days, from Stockton's Row Oxford Road, complained from the commencement of his illness of headache, with general uneasiness, and the symptoms of cold as he expressed himself. On his admission he did not complain of any pain, nor could he point out one part more uneasy than another; the only reply he made was, that he felt very ill; but gave no other account—he was very fretful, his tongue foul with red tip and edges—the papillæ elevated—thirst considerable—was uneasy, but his sensation did not amount to pain—his bowels were more regular than they had been—some Dover's powder was given at bed time. Next morning he acknowledged to pain in the abdomen on considerable pressure, but it was very slight; pulse 104, soft and expanded. Six leeches were applied to the ileo-cæcal region. In the evening the pain was removed—had not slept since his admission—during the day had a return of diarrhœa, his evacuations contained much mucus, light coloured.—6 grs of Pulv. Doveri with some Hyd. cum Cretâ were given at bed time; and to keep up counter irritation, an Empl. Ant. Tart. was applied to the right iliac fossa. Continued with little variation until the 7th day, when he complained of his head—had slight delirium, attempting to leave his bed—conjunctiva suffused—

pulse 100, weak and small. Head ordered to be shaved, and spirituous lotion constantly applied, 10 leeches to the temples, blister to the neck. In the evening his face was much sunk—great debility, but was considerably excited if spoken to. Camph. Mixt. with Tra Opii was prescribed. 8th. Same state as yesterday, except increase of coma—tongue dry and brown—pupils immovable and dilated—obliquity of vision. Hyd. cum Cretâ every 4 hours, another blister applied to the neck, the former having produced no effect, diarrhœa not so severe. 9th. Little alteration. 10th. Two blisters applied behind the ears. 11th. Persistence of coma—the whole head covered with a blister, sinapisms to the calves of the legs. 12th. Returning sensibility, could reply to questions, which he had been unable to do since the 7th day; had no pain of head, his tongue clean, dry, and shining; his bowels during this period had been comparatively quiescent; his debility was extreme. Beef tea, jelly, sago, wine, and brandy were carefully administered. Although frequent inquiry had been made concerning the state of his back, (as sloughing was suspected) which was stated to be free from excoriation, an examination discovered an incipient slough over the sacrum. Every attention was bestowed upon it by taking off the pressure &c. his purging returned, and notwithstanding the most constant care and nutritive diet, he sunk on the 17th day after his admission.

Examination 22 hours after death. Abdomen.—On laying open the ileum numerous ulcerations were discovered, and a very large one occupying the face of the valve opposed to the ileum. They varied in size from a split pea to half a crown; the mucous and muscular tunics were destroyed in some, in others they had not extended beyond the mucous coat; the edges of some were elevated, some presented more the appearance of abrasions; the ulceration on the valve had been attended with previous inflammatory action, as it was considerably thickened. The mesenteric glands were very much enlarged and completely changed in structure; if cut into they left their envelope entire: the glandular structure being absorbed, was replaced by an albuminous substance, in the centre of which an imperfect suppuration was observed. Thorax.—The viscera were quite healthy.

Head.—A considerable effusion of fluid betwixt the arachnoid and pia mater; thickening in the former membrane, especially at the base, with deposition of a semi-glutinous substance adhering to it. Very few bloody spots on the brain; large collection of fluid in the ventricles, amounting to nearly 2 oz.

CASE 3.—Robert Murray admitted Aug, 9th, aged 14 years, ill 5 days Acton St. Bank Top. From a conviction that the only chance of success was to combat as soon as possible the inflammatory affection of the mucous membranes, from the great mortality—and the slow convalescence of those who recovered, it was determined in the next case that was admitted, if nothing contra-indicated to adopt general depletion. This being considered a favourable case, he was bled on the day of his admission to 10 oz, but without any benefit. He complained of very little pain of the abdomen, and only on considerable pressure; pulse 100 and soft, tongue red and slightly furred;

thirst considerable, bowels very much relaxed; evacuations watery, and of a bright yellow colour; loss of sleep and appetite. Pulv. cretæ co. with Hyd. cum cretâ, and Pulv. Ipecac. Co. was given every 5 hours. 11th. No improvement, diarrhœa unaffected by powder. Mist Catech. (Man. Pharm.) with an additional quantity of Tinc. Opii was prescribed, but from this he derived very little benefit; no pain of abdomen. 13th. Remains as yesterday. rep. Pulv. 3tiis horis—pulse 110 small and weak; to take beef tea. He continued without any marked change till the 15th. when his head became painful—suffused conjunctiva—had rambled during the day. Ordered his head to be shaved and spirit bath applied; a blister to the nape of the neck, and sinapisms to the soles of the feet. 16th. His purging scarcely so severe, evacuations contained more mucus, and were more fetid. Sulphate of Copper, as recommended by Dr. Elliotson, was given him; but producing no effect on his bowels, causing pain of his stomach, it was discontinued. A pill containing 3 grs Plumb. Supercet. and 1 grain of Opium was substituted. 19th. His head affection became more severe—sinapisms to the inside of the thighs, two blisters behind the ears. 20th. Sensibility gradually returning, diarrhœa not so severe; in the evening could reply to questions, debility very great. Vini Rubri ℥vj quotidie. 21st. Nutritious diet consisting of eggs, sago, beef tea, &c. freely administered. 22nd. Does not rally, expired in the evening, without any abatement of purging, or any effect on the system, although freely supplied with wine and burnt brandy.

Examination 14 hours after death. Abdomen.—Peritoneum more vascular where covering the lower part of the ileum than usual in these cases, numerous ulcerations of this gut, extending ten inches upwards, differing much in character, some having the appearance of small excavations, without thickened edges; others with very elevated edges, having small fungoid excrescences or elevations on their base; in some, sloughs adherent to the face of the ulcer; in others, lymph was deposited. One large ulcer occupied the ileo-cæcal valve. They differed in depth, but the destruction of the substance was not so extensive as in many other cases. The mesenteric glands were very much enlarged and their structure was completely changed; much coagulated blood was found in the intestine, some distance above the ulcerations; none had been discovered in the evacuations, the capillaries of the mucous membrane were much congested: the Jejunum contained a great quantity of mucus.

Thorax.—Viscera healthy.

Head.—The brain itself presented no discoverable deviation from its healthy appearance. The tunica arachnoidea thickened at the base, where it extends from one crus cerebri to the other, (the most frequent seat of depositions;) the ventricles of the brain contained about 1 oz of fluid, and an equal quantity was found in the cranium.

CASE 4.—A man aged 55 years, ill 14 days, from Pigeon street, on his admission complained of slight pain of loins, great debility, had vomited frequently since his attack, pulse 96, soft and weak: tongue brown and dry, slight thirst: bowels had been much relaxed

since the commencement of his illness; he acknowledged to no pain of the abdomen, was much troubled with tenesmus. A small dose of Ol. Ricini with Tra Opii was given to him, which relieved the urgency of the last named symptom: his evacuations were of a light yellow, watery, and as if ochre had been mixed with fluid, of very offensive fetor. Hyd. cum cretâ and Pulv. Doveri were directed to be taken every 6 hours. Mist. Camph. and Liq. Amm. Acet. every four hours. There were few changes in the above symptoms for three or four days, when low delirium with subsultus tendinum supervened—pulse 110, very small and compressible—tongue slightly furred, injected and bright—debility increasing, notwithstanding the most assiduous administration of stimuli—On the 7th day after his admission he expired.

Examination 10 hours after death. Head.—The arachnoid membrane opaque and thickened, considerable effusion betwixt it and the pia mater, the vessels of which were much congested—the brain was unusually free from bloody puncta—the ventricles much distended with fluid.

Thorax.—Adhesion of pleuræ of long standing—the heart and lungs healthy.

Abdomen.—In the intestine the following diseased state was found. Ulcerations of various extent in the ileum, also in the colon. Those in the ileum were very small except near its termination; attached to the bodies of two ulcers there were large sloughs, which could be easily detached; the peritoneal was the only sound tunic. Around the ulcerations of the colon the edges were not thickened. The mucous coat was very vascular, particularly in the neighbourhood of the ulcers.

CASE 5.—A man aged 40 years, ill 6 days, from Canal street, Ancoats, had complained of general *malaise* for some time past, without pain distinctly referrible to any part. His appetite had failed, and debility had been gradually increasing. On my first visit he complained of uneasiness in his head, confined to the temples: his bowels, which had been very irregular, were now inactive; his tongue yellow and moist, his pulse 110, with a fair degree of power; his eyes slightly intolerant of light; had passed sleepless nights. Leeches were applied to the temples, a blister behind the neck. 2 grs of Hyd. Subm. and 8 grs of Pulv. Doveri at bed time, with a small dose of Ol. Ricini in the morning. 11th. His head was much relieved—had not slept—no effect from the Ol. Ricini. Haust. Sennæ was given, which produced a copious evacuation; his tongue moist and less furred, pulse reduced in frequency, took his food better than he had done, and the day was passed more comfortably, but had no sleep. 3 gr of Hyd. cum Cretâ and 10 of Pulv. Doveri at bed time. 12th. His bowels were much purged in the night, and continued so during the day; the evacuations were light coloured, and of the consistence of yolk of egg: careful examination of his abdomen discovered very little pain; 8 leeches were applied to the ileo-cæcal region, and from this period, however hard the pressure, no complaint was made; a circumstance which, considering the termination of the case, invests it with peculiar interest. 13th. No pain, diarrhœa continues, his pulse

retains its strength, although his appearance indicates great debility; can lie on either side, or on his back, with his legs extended; his voice became very hoarse, from cold depending on his frequent rising to the chair. His diet consisted of sago, arrow root, beef tea, all of which he took freely. He continued with little alteration to the 17th, when he complained of spasm of his belly, as he named it; pressure produced no pain; his tongue was clear, red and shining; his pulse 100 and weak: his diarrhœa was suppressed, could lie with extended legs—a hot camomile bag was applied to the abdomen, and the *Haust. Ætheris cum Opio* prescribed. 18th. The return of his pains more frequent, no stool during the night: abdomen not painful on pressure, but rather tumid; pulse as yesterday: a purgative draught was taken without effect: in the evening an *Enema Colocynthidis* administered, which never returned—During the night he expired.

Examination 22 hours after death.—On laying open the abdomen a large collection of fluid was found, in which flocculi of lymph were diffused; the peritoneal coat of the intestine was covered with lymph to an extent that I never before witnessed. The mucous coat of the ileum presented numerous ulcerations, but it was with difficulty I discovered that which had perforated the peritoneum; it was not larger than to admit the head of a small probe—no fœcal matter discovered in the cavity of the abdomen. Several small ulcers were found in the cæcum, and the valve was nearly destroyed.

Head.—Considerable effusion betwixt the membranes and at the base—thickening of the arachnoid on the surface of the hemisphere and at the base, especially at that part which I before mentioned. The brain did not present any unusual degree of vascularity; nearly 2 oz of fluid were contained in the ventricles.

CASE 6.—A young woman, domestic servant, from King street, aged 24 years, ill 16 or 18 days, admitted 19th Sep. had gone through a continued fever, from which she recovered under the care of my friend Mr. Clough. During her convalescence, in direct opposition to the strictest orders, she committed some irregularity, and one morning arose at 5 o'clock, and followed her usual avocation during the day; shortly afterwards she was seized with vomiting and severe diarrhœa—her head was slightly affected, she was rather stupid, soon forgetting what directions had been given her. Slightly diffusible stimuli with some astringent medicines were prescribed, and a blister was applied to the epigastrium, to allay the vomiting. On my first visit she seemed labouring under great excitement—pulse 115, and soft; no pain. No prominent symptoms, her purging and vomiting had abated, her tongue was clear and moist; she took some broth which she retained. *Camphor Mixt. with Spiritus Lavand. Ammon. Carb. and Tinct. Opii* was prescribed, which was not rejected; in the evening however, she vomited a light green fluid; next day her diarrhœa returned—her evacuations watery, of a light brown colour, very fetid and slightly tinged with blood—hæmorrhage from her gums—considerable pressure produced a little pain in the right iliac fossa. A Tartar emetic plaster was applied; $1\frac{1}{4}$ gr of Opium and 3 gr of *Hyd. cum Cretâ* were given at bed time, but soon were

vomited—she retained a full dose of Laudanum; she passed a very restless night; her appetite continued pretty good, debility however increased; port wine and brandy were carefully administered; her diet consisted of sago, beef tea, and jelly. Next day her purging had abated. An infusion of Cascarella was prescribed, which her stomach bore very well: in the evening she began to ramble, leaving her bed if not strictly watched; her countenance was very anxious. On the 22nd, 5 gr of Pulv. Cornu Ust. Co, and 3 gr of Hyd. cum Cretâ were directed to be given three times a day—her diarrhœa returned and continued till her death—her stools assumed a clayey appearance, and had more consistence. After sinking very gradually, she expired on the 25th, 6 days after her admission, presenting nothing remarkable in her symptoms but progressive depression and exhaustion.

Post mortem examination furnished the following appearances.—The peritoneal surface of the Ileum presented more vascularity than is usually met with, although, in most cases, this intestine is darker than any other. On slitting it open, we found numerous ulcerations in its lower part, similar to those previously described; but for some distance towards the jejunum, the mucous follicles were very distinct and elevated, resembling that form of disease which Bretonneau has described under the term *Dothinenterite*. They seemed as if new matter was poured into them forming little nodules; the same state of follicle was found in the ascending portion of the colon. In many of the points ulceration had taken place and spread to different extents.

CASE 7.—A boy aged 11 years, from Jackson street, London Road, presented the same general symptoms as in the preceding cases, except that his head was not affected. Diarrhœa was very severe. Superacetate of Lead was given without his deriving any permanent benefit from it. A few days after his admission he was attacked with Bronchitis, which speedily proved fatal.

Examination 14 hours after death. Abdomen.—Numerous ulcerations in the ileum, presenting no peculiarity worthy of detail. The small intestines were very much contracted, and there were 7 invaginations in the jejunum, depending probably on the excessive action of the muscular coat. The mesenteric glands very much enlarged and changed in structure.

Thorax.—The mucous membrane of Bronchi very much inflamed, with considerable effusion; the lungs very congested.

Head.—The contents healthy.

CASE 8.—A female, aged 39 years, ill 14 days, 21 Durham street. Her case had a more speedy termination than usual. She was admitted on the 12th, and died on the 16th of Octr. Symptoms same as in the preceding cases—Leeches were applied to the abdomen, and afterwards a blister; her bowels were inactive on her admission, and a gentle purgative was prescribed—a diarrhœa supervened, over which the Superacetate of lead had no controul.

Examination 28 hours after death.—A great quantity of blood was found in the intestine, although none was discovered in her evacua-

tions. Large ulcerations in the ileum—mesenteric glands of considerable size. I should have been glad to have had an opportunity of detailing the state of the brain: but no examination could be obtained, and this cursory account must find an excuse in a stolen inspection and the selection of an unfortunate time for performing it.

CASE 9.—The last case I shall detail which proved fatal, is of a domestic servant from Pendleton, aged 21 years, ill 7 days. She attributed her illness to cold caught by leaving her washing when in a profuse state of perspiration, and walking some distance without any addition of clothing; she had been bled generally and locally previous to her admission, when she complained of pain in her abdomen and back; that of the former being much increased on pressure: her pulse was 100, and full but quite soft—tongue dry and glazed—had diarrhœa. 8 leeches were applied to the abdomen, which relieved her; on the following day a blister was applied to the abdomen: during the day she vomited a considerable quantity of bilious fluid. Her vomiting continued at intervals till the 5th day from her admission, when it ceased. 5 gr of Superacetate of Lead and 1 gr of Opium produced very little effect upon her diarrhœa. She now became noisy, frequently rising from her bed; her face was flushed, her scalp hot, pulse frequent but soft, tongue dry and brown. Her head was shaved and a spirit bath applied; leeches were twice more applied to the abdomen and afterwards a blister; her diarrhœa was not so distressing, a blister was also applied to the neck; diffusible stimuli were carefully tried, but she sunk on the 11th day after her admission; her head was the part principally affected.

Inspected 22 hours after death.—The peritoneal surface of the ileum not more vascular than natural: the mucous membrane of this gut extensively ulcerated; one near the valve upwards of 2 inches in length, the surface covered with a slough, a band of lymph extended from one side of the intestine to the other; the jejunum was unusually attenuated. About $1\frac{1}{2}$ drms of fluid was effused betwixt the arachnoid and pia mater; none in the ventricles. The bloody puncta more numerous than in any other brain I examined.

I shall only detail 2 cases of recovery, one occurred under Mr. Johnson's, the other under my own care. To Mr. J. I am indebted for the following case.—A woman aged 40 years, resident in Hope street, Oldfield Road, admitted June 4th. She complained at the first visit, of severe pain along the spine and in her abdomen, increased on pressure; she was very restless and anxious—tongue moist and clean; pulse 90 and soft, had had a diarrhœa for 3 or 4 days. 16 Leeches were applied to the temple, previous to her admission, which relieved her head, of which she complained. 12 gr of Pulv. Doveri and 2 of Hyd Subm. were taken at bed time: this producing no mitigation of pain, camomile bags were applied to the abdomen and whole length of spine, and 20 drops of Laudanum at bed time. In the morning she was much relieved; in the evening bilious vomiting supervened, which for some time resisted all means to allay it. 29th. The diarrhœa continued, debility rapidly increasing, her tongue dry and brown; pulse 96, very soft and small: she was restless and irri-

table, but free from pain. Small doses of diffusible stimuli, wine and opium, were carefully exhibited. 30th. She passed many bloody stools. 3 gr of Sup. Plumbi with 1 gr of opium were taken every 6 hours, and an increased quantity of port wine. July 1st. Diarrhœa same as yesterday, debility very great, unable to protrude her tongue—face Hippocratic, mucous râle—extremities cold. Sinapisms were applied to different parts of the body. 20 oz of port wine and 3 oz of brandy quotidie for 10 days, beef tea, sago, and jelly.

By these means she recovered from her extreme depression, and after a long tedious convalescence, she was discharged cured; her bowels however were very irritable, and never required more than $\mathfrak{z}\text{j}$ of Castor oil to produce an evacuation.

The other case was of a young woman aged 25 years, ill 14 days, resided in Bridgewater street, she complained of nothing but her head, with frequent vomiting and very loose state of bowels; tongue furred and moist, pulse frequent and possessed little power. A blister was applied to the neck—effervescing draughts with laudanum were ordered every four hours; next day nearly same as last night. Head to be shaved, and cold bath applied; her stools contained much mucus—tenesmus very distressing. 2 drachms of castor oil with 30 drops of Laudanum were prescribed. On the following day her excitement having increased, large doses of Camph. and Opium were given, but produced little benefit. Evacuations more copious and of a yellow color. Hyd. cum Cretâ Pulv. Cret. cum Opio and Doveri were taken with little advantage; an Emp. Ant. Tart. to the ileo-cæcal region, which was tender on pressure; her stools were bloody. 3 gr of Supracet. Plumb. every 5 hours gradually increased to 6 gr, soon restrained the hæmorrhage and diarrhœa; she was reduced so low that she was unable to move—profuse perspiration, skin blanched, tongue moist and clear. 8 oz of wine per diem—beef tea, jelly, arrow root ad libitum. After being in the house 85 days she was discharged cured.

On reviewing these cases several important considerations present themselves; and first, the absence of pain in some, and the small amount of it in other cases. Andral says that the pain will be greatest in proportion as the peritoneum is affected: but in two of the above detailed cases (6 & 9) we find a contradiction to this statement. In case 6, the peritoneum was more vascular, yet very little complaint was made. In case 9, the peritoneum was unusually faint colored; whereas she voluntarily complained of pain. Case 5 may be adduced as opposed to Andral's statement, where acute peritonitis was proceeding without any indication of it. But another cause may be found for this obscurity to which I shall immediately refer. It will be found, that the first serious disorganization of mucous membrane may be going on without any complaint being made. I need only adduce the ulceration in Phthisis; and cases are on record where ulceration of the Larynx has existed without pain. Dr. Tweedie accounts for the absence of pain from the inability of applying pressure over the inflamed portion of the bowel, or from the impossibility of bringing the surfaces of the inflamed intestine in direct contact.

The absence of pain is no doubt dependant on the low degree of sensibility with which mucous membranes are endowed. In one case only, (9) did the patient die comatose, or from the diseased condition of the nervous centres. After a certain period the violence of the symptoms abated, continuing until effusion took place; the patient sinking from exhaustion and inanition. Numerous cases are on record, shewing that fluid may exist in the brain without producing alarming symptoms. "It is not," as Dr. Abercrombie observes, "the mere presence of fluid in the brain that gives rise to the symptoms of Hydrocephalus, but of that disease of which the effusion is a consequence." In case 5, nearly 2 oz of fluid were found in the ventricles, with depositions on the arachnoid. Still his intellects were unimpaired to the last moment of his life. The vascularity of the brain, and the quantity of effused fluid seem to be in an inverse ratio. In case 9 there was no effusion in the brain, with considerable vascularity. Case 10 also corroborates this statement. It may be inquired if I think fluid was effused in the cases that recovered, I reply in the affirmative, and refer to case 2. His understanding was as perfect as possible on the day of his death, although during one part of his illness he lost all consciousness, had obliquity of vision, and immovable pupil. The almost universal coincidence of affection of the head with ulceration of the intestine, is a circumstance of great interest. The head is often primarily affected, but very soon yields, again it becomes the seat of action, probably arising from the irritation of the lining membrane of the viscera: there seems to be a reciprocal action, for which it is difficult to account, but this does not affect the fact of the statement. It is an interesting circumstance in case 5, that a very severe peritonitis existed without any symptoms to indicate it. The pulse was not much excited either in force or frequency, the total absence of pain on pressure, and of vomiting; ability of lying in an extended posture; depending, most probably, on the effusion in the brain. Dr. Abercrombie states that the bowels in peritonitis, are either in a natural state, or easily acted upon; this however was not the case. I may here notice that the diarrhoea was considerably affected by the state of the brain: in most cases yielding in severity as the symptoms of disease there increased.

The enlargements of the mesenteric glands, attendant on every case, must owe their origin to irritation conveyed along the absorbents. If I have not particularised the existence of disease in the glands in every case it was because I intended to advert to the subject again. Spigelius attributed enlargement of the mesenteric glands to ulcerated intestine; we did not only find an increase of size, but a complete change of structure. Those glands which are situated nearest the ulcerations are the most affected; when inspected early they are of a light red color, but as the disease advances they contain a caseous substance, which is laminated; imperfectly formed pus is found in the centre of some of them: their capsules are very loosely connected with them. It has been supposed that their enlargement depends on the deposition of albumen. We must not lose sight of the important effect on the transmission of chyle which such a change of the

gland is likely to produce. The ulcers of the intestine differ in appearance and extent. In some, from the previous depositions of fibrin, the coats of the intestine do not appear attenuated, and you could not pronounce on the existence of ulceration by pinching the intestine betwixt your finger and thumb; some appear excavated or dissected out, some have a chancreous appearance; some have sloughs attached to their bases; in one case a band of lymph connected the two sides together; in some the edges are very much elevated with a few granulations on their surface. Andral traces the changes that take place in the mucous membrane, to an enlarged state of the glandulæ agminatæ. Baillie states, "that ulceration runs more frequently in the follicular glands, which are collected in little oval groups, than in any other part. "Although it is probable that the mucous follicles are frequently affected with ulceration, it often extends, and perhaps may commence in the membrane situated between them. The mucous membrane of the intestines is more liable to ulceration than any other of the same class. The anatomical characters differ materially, and the secretions and irritations to which it is subjected, may probably account for it. If the ulceration depend on changes in the follicles, this liability is easily accounted for, since the pulmonary and urethro-vesical mucous membranes contain fewer follicles. The duodenum is seldom affected with ulceration, yet the number of follicles is greater than any other part of the alimentary canal. The ulcers in the large are very different from those in the small intestines; they seem to be attended with very little vascular action. It is difficult to explain why the lower part of the ileum should be the most frequent seat of ulceration; it seldom extends beyond the inferior fifth; the depending position has been supposed to have some influence. Can the physiology of the part account for this fact? The pulse affords no positive information; its range is from 90 to 100. The quickest pulse I found in a girl whose case I have not introduced into this report; it varied from 120 to 135. It never indicated much power in the system, but generally considerable irritability. The tongue was not an infallible index. The following are its most marked appearances—it may be red, varying in shade; this colour extending over its whole surface, or only confined to the tip—sometimes there is a coating of yellow fur either in the centre or on each side. The papillæ are erectile as if they had been injected, and resembling the exterior of a strawberry; and you may find it quite clear, of a dark red, shining but dry, and seems as if it had been polished. The expression of the countenance does not present any marked deviation from the natural one. The fat situated betwixt the buccinator and the masseter is rapidly absorbed.

The appetite in the majority of cases continues good. The evacuations consist of mucus highly tinged with bile and portions of partially digested food, and present the following varieties—they are fluid, of a light yellow colour, as if ochre had been mixed with water; in some cases there is a sediment; in others they resemble yolk of egg divided into small pieces, and suspended in highly tinged mucus,—yellow. The fœtor is very peculiar, very volatile; probably owing

to the sloughy state of the gut. The secretion of bile increased, if we may judge from the color of the egesta; the usual quantity not being absorbed, owing to improper chylication. In the fatal cases the gall bladder has generally been found distended with bile.

The application of leeches to the ileo-cæcal region has afforded considerable relief in those cases where pain was complained of. Although the pain be absent, if the stools be copious and present either of the appearances I have noticed, and the tongue and general condition of the patient such as I have stated, local depletion will be beneficial. General bleeding was only tried in one case; the blood presented no unusual appearance, nor did the patient derive any benefit from it. The application of blisters will be found to have a good effect, but if they produce too much general excitement, tartar emetic plasters may be substituted; but if care be not taken, sloughs are likely to form under them. A combination of Sup. of Lead and Opium has afforded the most relief; in the two reported cases of recovery, it was carried as far as 6 grs of the former three times a day. There is not the same objection against it as against the Sulph. of Copper which soon produces pain of the stomach, &c. What the ratio mendi of this medicine is, I know not: probably by acting on the muscular coat of the intestine, and thus preventing the continued irritation of bodies over the ulcerated surfaces. Catechu, creta, and Kino are inadequate to this effect. Death seems to be produced by exhaustion, and from the irritation of the mucous membrane.

I must remark that this disease has not attacked the lowest class of patients, but seems to be confined to those who have been occupied not in the lowest, but most laborious occupations of life. It is worthy of observation, that several were domestic servants and apprentices. The fever which I have been describing, is very dissimilar to Typhus. In the difference of the cerebral symptoms—in the muscular prostration—in the black tongue, except in one case, and sordes of teeth and lips. In the absence of muddy complexion, of the peculiar fetid exhalations from the sebaceous follicle, from the dull eye and dropping lid, of loss of appetite, also in the pathological conditions exhibited by dissection. In these cases, the system seems as if it were excited by some latent irritation, of which it was attempting to rid itself.

Contagion does not seem to have had any influence in producing or continuing this state of disease: cases have been admitted from all parts of the town.

During the period included in this report, 169 cases of fever have been admitted into the House of Recovery. The following is the proportion from each district of the town.

										Deaths.
Bank Top District.	-	-	-	-	32	13	ULCERATIONS	.	.	4
Angel Meadow do.	-	-	-	-	52	19	SIMPLE FEVER	.	.	2
Salford do.	-	-	-	-	33	8	ULCERATION	.	.	3
Little do	-	-	-	-	10	44	SIMPLE FEVER	.	.	2
Deansgate do.	-	-	-	-	19	13	ULCERATION	.	.	3
Ancoats do.	-	-	-	-	23	20	SIMPLE FEVER	.	.	2
						4	ULCERATION	.	.	1
						6	SIMPLE FEVER	.	.	0
						6	ULCERATION	.	.	1
						13	SIMPLE FEVER	.	.	0
						9	ULCERATION	.	.	4
						14	SIMPLE FEVER	.	.	1
					169					

From this number 50 have laboured under ulcerated intestine; of whom 16 died and were inspected—34 have been discharged cured.

Males and females have been affected nearly in the same proportion; of the former 27, of the latter 23 were admitted; but the rate of mortality has considerably preponderated in the scale of males.—Of the 16 deaths 12 occurred in them, and only 4 in females.

The remaining cases, 119 in number, have been of the most simple kind of fever, of whom 7 died; but it may be proper to state, that 2 died from Hydrothorax, 2 from Hydrocephalus, and 1 was a sudden death, of which no inspection could be obtained.

I cannot conclude without expressing my grateful acknowledgments to Mr. Johnson, (during whose absence I had an opportunity of attending these cases,) for the valuable assistance he has afforded me in drawing up this Report.

PART II.

NOTICES OF RECENT PUBLICATIONS.

- I. *Memoir of the Life, Writings, and Correspondence of James Currie, M.D. F.R.S., &c. &c., of Liverpool.* By his son, WILLIAM WALLACE CURRIE. In two volumes, 8vo. Price 24s. Longman and Co. 1831.

THESE volumes, relating to one of the most accomplished physicians by whom the history of British medicine has been adorned, and the principal part of whose professional life was spent within the more immediate provincial sphere of our labours, demand from us a brief notice.

Dr. Currie was born at Annandale, in 1756. He received the principal part of his early education at Dumfries school. When only fifteen years old, he was sent out to Virginia by his father, with the hope of forming advantageous mercantile connections. The political troubles, which broke out in 1773 between Great Britain and the Colonies, terminated all his prospects of commercial adventure, and he accordingly returned to England in 1777, after an absence of six years. In the winter of that year, he commenced his professional studies at Edinburgh, with the ardent cultivation of which he conjoined the pursuit of elegant literature and metaphysical science. In order to secure a medical appointment in the army, he repaired to the University of Glasgow, where, after a compliance with the accustomed forms, he graduated in April, 1780—a few months before the stated day for conferring degrees at Edinburgh. The idea of entering the public service was soon abandoned: and at the recommendation, principally, of his relation Dr. Currie of Chester, (who still survives, venerable not only for age, but for those qualities which can alone give dignity to age,) he was induced to select Liverpool as the centre of his professional exertions. Three

years subsequently, his prosperity, independence, and professional success were materially improved by marriage. In 1784, his active duties were for some time suspended by a severe inflammatory affection of the chest, induced by exposure to the combined influence of night travelling, loss of rest, and mental anxiety, consequent on his attendance on his friend Dr. Bell of Manchester, of whose life and character he wrote a very elegant memorial. In this illness, it is probable that the seeds were deposited of that fatal malady, by which his public career was prematurely closed. From this period, the time of Dr. Currie was divided between the local Institutions and improvements of the town of Liverpool, to which he devoted himself with uncommon ardour and disinterestedness—the general politics, not only of his own country, but of Europe, in the discussion of which he appeared prominently, and at the great risk of his personal interests, as the uncompromising champion of liberal principles,—and the literature, as well as the practice of his profession; the former of which he enriched chiefly by his medical Reports on cold water in fever, and in the latter of which he gradually attained both the fame, and the vulgar, but solid rewards of eminence. The merit of first recommending cold and tepid affusion in fever, belonged, as most of our readers know, to Dr. Wright; but to Dr. Currie we are principally indebted for the first specific directions for its safe application, amongst which we may be allowed to quote the principal:—cold water may be safely used “when there is no sense of chilliness present, when the heat of the surface is steadily about what is natural, and when there is no general or profuse sensible perspiration.” Notwithstanding the abundant testimonies in favour of cold affusion in febrile diseases, it must be confessed, that in private practice, either in consequence of want of confidence in its efficacy, or of too great deference to the prejudices of the friends of patients, its employment is nearly restricted to cases of scarlatina. In the ordinary continued fever of this country, though strongly recommended by Currie, it is seldom admissible, chiefly on account of the local phlegmasiæ with which that disease is so frequently complicated.

From the year 1797 to 1800, the leisure hours of Currie, redeemed from the engagements of increasing practice, were chiefly occupied in arranging for publication, the manuscripts, and delineating the biography of BURNS. This work, which appeared in May 1800, procured for its author a larger portion of fame than he had acquired even as a physician. His literary celebrity did not, however, as it has sometimes been alleged, and as, in many other instances it was proved, detract from his professional reputation and success. His practice, about this period, rapidly increased, and was limited only by his declining health, which compelled him to make frequent excursions from the scene of his labours. Notwithstanding these interruptions, his receipts averaged nearly £2000 a-year; an income which, considering the very moderate standard by which professional honoraria are regulated, amongst our Liverpool brethren, implies an extensive and laborious practice.

In 1804, Dr. Currie removed to Bath, with the intention of passing the winter months in its milder climate. As the period of his intended return to Liverpool approached, his health continued so infirm that he was induced to abandon the idea of resuming his profession, in that place, and finally settled at Bath. In this more genial spot he appeared, at first, to recruit; but the improvement was only temporary. His health continuing to decline, he resolved upon another remove. In August 1805, he repaired to the South coast of England. When he arrived at Sidmouth, he grew rapidly worse, and on the 31st of the month, he breathed his last, at that place, in his fiftieth year.

In the meagre language of his unprofessional biographer, "his disease proved an enlargement of the heart with incipient ossification of its adjoining vessels, accompanied by extraordinary wasting and adhesion of the right lung."

It has been the lot of only a comparatively small number of our profession, to conjoin a highly medical reputation, with the cultivation of a variety of extra-professional pursuits so successfully as Dr. Currie. The volumes before us, present him to our view, quite as much in the light of an ardent politician, and votary of elegant literature, as in that of a contributor to medical science. We cannot help concluding, that the qualities of his mind fitted him rather for the discursive pursuits of literature, than for the more severe, and matter-of-fact investigations of science. He certainly possessed the talent of *original observation*, which, had his ambition been *bounded* by his profession, might have placed him in a conspicuous position amongst the benefactors of the apollinarian art.

In reference to the character of the work before us, we may remark, that it is altogether respectable, and creditable both to the literary talent, and filial piety of the biographer. The second vol. consists chiefly of the correspondence and detached essays of Dr. Currie, of various degrees of merit. We cannot help thinking, that the character of some of them scarcely justified their publication. The work should not have extended to more than one volume, within the limits of which it might have been easily compressed, while the public would have been spared, not only much expensive letter-press, but the labour of wading through a considerable quantity of common-place, the interest of which will be confined to the immediate friends, or local connections of the deceased.

We cannot help uniting with our biographer, in his sentiment of regret, that the Life of Dr. Currie was not undertaken by his intimate friend, the historian of the Medici family, the vivacity of whose style could relieve the barrenness of a subject still more deficient in incident, and whose recollections of contemporary events and characters, would have rendered such a work an original and permanent contribution to our national literature.

II.—JOERG on the Medical Effects of Nitrate of Potass.

IN order to promote the study of medical agents, a very remarkable society has, within the last few years, been instituted at Leipsic, a society of *experimentation*, which consists of twenty seven persons, of whom twenty two are young physicians, two are children, one 14, the other 16 years old, and three are females, whose investigations are combined and directed by M. Joerg. These persons enjoy good health, live temperately, and are each in their turn the subject of some experiment to illustrate the operation of particular medicines. The doses of medicine, the circumstances under which they may have been exhibited, and the resulting phenomena, are all accurately registered by M. Joerg, who has furnished the public with the volume containing the transactions of this novel kind of Association.

The first class of experiments relate to the action of Nitrate of Potass. This medicine was given to eight of the members in doses, from 15 grains to two drachms, in which it appeared to exert a stimulating action on the skin, the kidneys, and the intestinal canal. Its exciting power on the alimentary canal is sufficiently shewn by the increased salivary discharge, the thirst, pains in the epigastrium, liquid evacuations, and where it extends to the large intestines, by the urgent Tenesmus. The pulse does not become slower, but more frequent under its influence. M. Joerg concludes that this medicine cannot be considered an antiphlogistic remedy; that, in fact, by increasing the activity of the secretory organs, it predisposes them to inflammation. There is some truth and much plausibility, in this view, but still there is some degree of fallacy. The utility of the Nitrate of Potass, as a popular remedy in *some* kinds of cynanche tonsillaris, and in that form of dyspepsia connected with subacute inflammation of the villous coat of the stomach, is well known. Is it possible that a medicine, having a stimulant action, may ever be considered as an antiphlogistic remedy? Paradoxical as is the statement, we can have no doubt of the fact.

In inflammatory affections of the abdominal viscera, its long-continued use is scarcely ever admissible. Its purgative action is very limited and uncertain, and as a diuretic in ordinary hydropical cases, it is inferior to many others belonging to the same class of remedies.

M. Joerg concludes, that as the principal action of nitrate of potass is directed to the gastro-intestinal canal, and the urinary organs, its employment is principally indicated in inflammatory affections of the brain and its membranes; in those of the throat, and, to a certain extent, in those of the chest. As in moderate doses it does not act on the cerebro-spinal system, it will prove an admirable remedy in the encephalitis of infants, and be a safe substitute for calomel. Its utility as an emmenagogue is proved by a number of cases.

Our limits will not allow us at present to follow Mr. Joerg in his experiments on laurel-water, &c. We hope, however, on a future occasion, to advert to his interesting researches on this and other medicinal agents.

III.—*Descriptive Account of a New Shower Bath*, By JOHN MURRAY,
F. A. S. &c. &c. 2nd Edition, P. 41, Whittaker & Co. London.

IN a former number we made a brief reference to the essays of the ingenious and philanthropic author of the pamphlet before us, on Consumption and Hydrophobia. Whatever may be the merit of his plans, the benevolence of his intentions could not be questioned; and in the present short publication, we have another illustration of the author's aim to render the inventions of science tributary to the real benefit of mankind. Without the plate which accompanies this tract it would be impossible to render intelligible the description of the Shower Bath: the great superiority of which, to those ordinarily used, is the facility which it affords of dividing the same supply of water into an unlimited number of showers, the intervals between which may be regulated according to the discretion of the patient, while the stream may be reduced to any degree of attenuation. In the administration of warm or tepid shower baths, (probably the most useful kind,) these advantages are very important. They greatly facilitate the use of friction, with a flesh brush or a large sponge, so materially conducive to the efficacy of the process.

Mr. Murray has also given us an account (with a plate) of an apparatus for restoring suspended animation, for which we may venture to offer him the thanks of the profession.

IV.—*An Introduction to the study of Human Anatomy*, By JAMES PAXTON, Member of the Royal College of Surgeons, Honorary Member of the Ashmolean Society, Author of the Notes and Illustrations of Dr. Paley's Natural Theology, &c., with Illustrations. Oxford, 1831.

A NEW work on Anatomy might at first appear uncalled for at the present period. To pass over the old standard authors, we have in our own language Fyfe, the improved edition of Bell, Monro, Lizars, the recent admirable work of Quain, Dr. Knox's Translation of Cloquet, Bransby Cooper's Lectures, besides a host of manuals of dissection. What then has the present author to offer, which can render acceptable another addition to our anatomical literature? Has Mr. Paxton discovered any new facts? Has he any new views of the mode of conducting anatomical investigations? Does he propose any new applications to practice? Without answering these questions, we give it as our opinion, that Mr. P's work shews very good cause for his appearance before the public. His object was not merely to present to his readers a sufficiently clear account of the structures and organs of the human body, but to assist their conceptions and studies by delineations accompanying the text; in short, that the treatises should contain, to use his own words, "graphic and descriptive anatomy on the same page." This purpose has never been aimed at hitherto,

certainly not by any means to the same extent as in the present work. We remember so well how grateful was the comparatively trifling help to our early studies by the few scattered delineations in Bell's *Anatomy*; and we know how greatly the attainment of knowledge in the other sciences, such as Chemistry, Botany, Mechanics, &c. has been facilitated by the introduction of marginal figures, that we are compelled to set a high value on Mr. Paxton's labours. This first volume of the work contains no less than 208 illustrations, exceedingly well designed, and executed; and they will, we doubt not, afford considerable assistance in the formation of the student's first conceptions of parts and their relations, in the guidance of his dissections, and in the renewal of his impressions. We cannot help thinking, that had the work been published some years earlier, we might have been spared many weary, and often profitless hours, spent in shadowing to ourselves ideas that frequently proved imperfect, or faulty, and in referring from book to book, (perhaps not always at hand,) in search of opportunities for comparing plates and drawings with written descriptions. It is scarcely necessary however, to impress on the mind of the student, that after all, these helps should only precede, or accompany, or follow dissection: and that the types of the printer, and the draughtsman's pencil are but feeble instruments without the employment of the scalpel.

We do not affect to have read the book through, but the passages which we have glanced at, have impressed us with a favourable opinion of the correctness and perspicuity of the author's descriptions. Being concise and less full of minutiae than in some other modern works, they are better adapted for the use of the earlier, than of the more advanced student. In some respects we think Mr. Paxton may be charged with omissions; thus on looking over the section on the teeth, we were somewhat surprised to observe no account of their formation, and felt still more wonder when we turned to the part which treats generally of the Bones, and found that the subject of their growth and reparation after injuries, was not at all entered upon. Notwithstanding this deficiency however, we do not hesitate to recommend the work strongly to the student, as an exceedingly useful production,

Mr. P. adopts the arrangement of Tissues. The present volume contains the Osseous, Medullary, Cartilaginous, Fibrous, Muscular, and Vascular Systems. Each of these is prefaced with a few remarks on its *general* anatomy; and the author then proceeds to the more *special* analysis.

END OF THE FIRST VOLUME.

